AN INVESTIGATION OF RESORT BUSINESS SUSTAINABILITY: A COMPARATIVE STUDY OF SCOTTISH AND SWISS SKI RESORTS

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Abstract

As the tourism industry faces economic, social, political and other challenges, there is a need to develop adaptation strategies to reinforce business sustainability of organisations. Ski resort destinations have been chosen to determine and analyse factors as actual and potential barriers to maintain a sustainable business practice. The academic debate revealed a number of gaps, critical issues for the ski industry to be addressed. Concurrently, a lack of an empirical data requires research in order to develop a set of sustainability determinants for generic ski resort use.

In line with that, the mixed methodological approach aims to investigate comprehensively factors of business sustainability and sustainability determinants and incorporates two research methods: the qualitative and the quantitative research techniques. The qualitative methodological stance allows arranging a qualitative research and, therefore, conducting interviews among the chosen Scottish and Swiss ski resorts for the purpose of a comparative analysis. The quantitative methodological stance assists to use a series of the Delphi Survey rounds and permits to engage the experts from the industry, selected carefully based on the objective criteria.

The findings became a basis for novel concept “internal business sustainability” in relation to ski resorts. The collected data allowed providing recommendations for government, ski resorts generally, ski resorts in Switzerland, ski resorts in Scotland, VisitScotland and Graubünden Tourism. The Delphi study contributed significantly to the field of knowledge and a new framework was developed for a future selection of a model of sustainability indicators for generic ski resort use. The developed framework consists of a set of sustainability determinants in the form of the adaptation strategies with regard to the changing environment, changing in government policies about sustainability, changing in economic climate, changing in socio-cultural environment and changing in technology. All of the elements of the new framework were examined, evaluated and filtered during three consecutive rounds of the Delphi and reached consensus, which show their validity.

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Daria Zorina.

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List of Abbreviations

BMR	Blue Mountain Resort
BOS	Bristol Online Survey
BS	Business Sustainability
CERT	Center for Environmentally Responsible Tourism
CSD	Commission for Sustainable Development
CV	Coefficient of Variation
DD	Davos Declaration
EEA	European Environment Agency
NGO	Non Governmental Organization
QBL	Quadruple Bottom Line
SD	Sustainable Development
ST	Sustainable Tourism
STD	Sustainable Tourism Development
SIs	Sustainable Indicators
SPSS	Statistical Program for Social Sciences
STIs	Sustainable Tourism Indicators
TBL	Three-dimensional Triple Bottom-line
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNWTO	United Nations World Tourism Organization
US	United States
VS	VisitScotland
WCED	World Commission for Economic Development
α	Cronbach's alpha

Chapter 1: Introduction

Chapter One

1.1 Defining the Research Agenda

1.1.1 Introduction

Tourism is one of the largest industries in the world. Tourism might include various activities: from rambling in Snowdonia to family trips to Disneyland, sun and booze packages to Spain, Portugal or Greece, middle-class villas in Tuscany, wine tasting in Italy and France, all-inclusive Caribbean resorts, skiing in the Alps, wild life safaris in Africa or jungle tours in the Amazon (Mann, 2013). Thereby, tourism is a complex phenomenon that incorporates society, economy and environment. With the global expansion of the tourism industry following the Second World War, its impacts have been acknowledged and brought to a close attention (Manson, 2008; Liao, et at. 2013). United Nations Universal Declaration of Human Rights in the article 13 has asserted the right of everyone to freedom of movement within the borders of each state and the right to leave any country and return (UNUDHR, 1948), which was supposed to become a catalyst of travelling in today's globalized and unequal world. In this world tourism is a vital social need and a human right (Bianchi and Stephenson, 2013). The past 60 years have detected a notable growth in the tourism related activities. For instance, the statistics with regard to the international arrivals demonstrate an evolution from 25 million international arrivals in 1950 to 939 million in 2010 and to 980 million in 2011, corresponding to an average annual growth rate of over 6 per cent. However, the international arrivals have increased by 4.4 per cent despite the fact that 2011 was the year, when the world faced global financial uncertainties, fluctuations of the currencies and the fall of Euro against the US Dollar. Nevertheless, one of the most challenging issues associated with the tourism industry is a fear of terrorism. The fear of terrorism as a psychological barrier for people to travel has been triggered and escalated in 2001 with the tragic events of 9/11 in New York (Babu, et al. 2008). Moreover, the fear was increasing after the attacks in Bali, Spain, the UK, Egypt and France (the series of the excruciating terrorist attacks in Paris in November 13, Nice, in July 15). The Russian

airplane crash of Airbus A321 due to the bomb on board organized by the Isis-affiliated group has led to the restrain to travel to Egypt and, hence, to a loss of tourism business for the destination (Theguardian, 2015a; Theguardian, 2015b; Theguardian, 2016c). Nevertheless, tourism has a tendency to rejuvenate, for instance, despite natural disasters in Japan, bird flu, mad cow disease, major political changes in Middle East and North Africa the growth continued in 2012 (Smith and Stewart, 2014). In 2013 international tourist arrivals passed the milestone one billion mark. In 2014 the travel and tourism industry has become one of the world's largest industries, its contribution to the world's GDP is 5 per cent, 6 per cent of total exports and provide an employment to one out of every 12 people in both the advanced and emerging economies (UNWTO, 2014).

Tourism is rapidly growing and becoming sensitive and vulnerable to climate change especially in the areas, where recreational activities are directly connected to the weather conditions, for instance, winter-based tourism (WTO, 2003; Scott et al. 2006). There are about 80 countries in the world, where skiing is an important and valuable contributor to the tourism industry and economy in general. Among Western Europe, Eastern Europe & Central Asia, Asia & Pacific and America, the Alps are the biggest ski destinations in the world, "capturing 45% of skier visits" (Vanat, 2014, p. 11). Mountain environments cover 27 per cent of the land surface. Mountains are located in all continents and attract tourists with different motivations according to a variety of activities a destination is able to offer (Scott and McBoyle, 2007; Buckley, 2008;). The further from the equator the mountains are, the lower that altitude at which snow arises and the implication of that might create certain problems (Körner, 2003). Ski resorts in general face challenges with regard to sustainability and its measurement (Buckley, 2008; Mill, 2008; Valls and Sarda, 2009; Pickering, 2011; Scott, et al. 2012; Holden and Fennel, 2013; Pickering and Morrison, 2013). Many scholars agree that the mountain resorts are in constant need of ski equipment, lodging and food facilities, transportation and recreational places. A failure to provide any of them might influence profitability, business viability of a ski resort and also divert customers elsewhere (Scott, et al. 2006; Clark, et al. 2006; Mill, 2008). Scott and McBoyle (2007; Scott, 2011) insists on developing and

implementing of adaptation strategies assessing first supply- and demand-side adaptation that might change the projected impacts. Becken and Hay (2007) support them claiming that there is a need of immediate aggressive actions from the side of ski resorts managers to create new sustainable strategies. Despite the awareness of the stakeholders and managers to secure a sustainable business model for ski resorts (Bullough, 2011), viability and adaptation strategies, ways to maintain and improve business have to be investigated explicitly.

1.1.2 Topic Relevance and Rationale

Recent commentaries such as those of Hall (2008a), Scott (2008) and Scott and Becken (2010), Holden and Fennell (2013) demonstrate a rapid increase in the number of publications exploring at least some of the relationships between climate change and tourism, economics' implications and tourism, social connection and tourism in terms of sustainability and viability. The rapid increase could be confirmed by the analysis of the CABI Direct database, that has been undertaken by Weaver (2011), which revealed that in 128 English-language tourism journal articles published from 1986 to 2009 such relationships were the dominant topic. The number of published papers was gradually increasing: with just six from 1986 to 1996, but 44 from 1997 to 2005 and 80 from 2006 to 2009. Thus, according to Scott and Becken (2010, p. 286) "the awareness phase" has changed and converted into the stage when the scholars were concerned about the resorts and their operation, which had been proven by a higher percentage of academic articles.

Moreover, about 40% of the empirical papers targeted ski resorts, where 15% focused on the impact of climate change on tourism. According to the United Nations World Tourism Organization (UNWTO), the United Nations Environment Programme (UNEP) and the World Meteorological Organizations (WMO) climate change "must be considered the greatest challenge to the sustainability of tourism in the 21st century" (UNWTO-UNEP-WMO, 2008, p. 38). Nevertheless, the knowledge about ski resorts and climate change and local involvement is very limited in the sense of realizing its market implications for developing future adaptation strategies

(Scott, 2008; Scott, 2011; Holden and Fennell, 2013). A critical assessment and an empirical research among ski resorts destinations uncovered that quite frequently knowledge or perceptions of climate change implications did concern ski tourism representatives, but the concern had been limited towards the realization of the challenges only without offering tourism development and adaptation strategies (Pickering and Morrison, 2013). There is thus an immediate need not only to create adaptation strategies but to start implementing them as quickly as possible, otherwise; the ski industry would be jeopardized (Luthe and Schläpfer, 2011).

Rosenthal (2007) and Filho (2009) emphasize that one of the main indicators of ski resort sustainability is a rising concern of the particular resort's inhabitants connected with the significant loss of revenue of the local budget brought by tourism. In 2011 over the winter season in Davos (Switzerland) the loss was 1.2 million Swiss francs, which as Gaudenz Thoma, the head of Graubünden Tourism in Switzerland stated, was beyond critical. In line with that the inhabitants of Davos expressed their concern in their letters to local government (Meier and Wille, 2011).

The world nowadays is changing very fast due to economic crises, political situations, social movements and religious factors, which is why the central role of a manager is "no longer to manage stability, but to manage change*"* (Heap and Ingram, 1980-2007, p. 23) and to sustain business by offering various innovative approaches (Unbehaun, et al. 2008; Luthe and Schläpfer, 2011; Kušćer, 2014). The point of view of these authors echoed with a double force in Bullough's report for the Scottish ski industry, where he strongly emphasizes that doing absolutely nothing will cause a decline but creating a small growth might provide an economic return on the capital investment equivalent to 20-33% (2011, p. 67). In Scotland previous research conducted in 2007 and 2008 (an online questionnaire and face-to-face interviews with skiers at the five Scottish ski resorts) did not take into consideration a perspective of ski resorts themselves and their functioning, ignored a critical issue of business sustainability and viability focusing purely on sustainability in general (McCrum, et al., 2009). Thus, the Scottish published data is not up to date and lacks a clear view from the angle of ski resorts' viability to sustain their business. It is also

advisable to increase business viability of the Scottish ski resorts by the diversification of the proposals for improvement. In addition, this general statement has got a declarative meaning without any concrete conclusions and action plans. Therefore, the current research seeks to analyse the selected Scottish and Swiss ski resorts, which as became evident, has not been conducted till now taken into consideration the economic, environmental, social, political aspects in synergy.

In addition, an explorative comparative study in general is not an easy task. Such studies usually face many challenges and they are not easy to conduct due to the selection of variables and issues, which can be accurately compared; geographical diversification; invested resources; language barriers; methodological traps and many other factors to consider (Dieke, 1993; Pearce, 1993). However, the value of comparative studies should not be underestimated. According to Pearce (1993) a choice of two locations, destinations or companies cannot be influenced entirely by their similarities but also by their differences otherwise; future lessons, outcomes and contributions won't have an impact or will be useless to the science.

This research has focused upon two ski resort destinations: Scotland and Switzerland. The rationale of a necessity to conduct an empirical research in both countries in 2012 was the discovered declining statistical data for the previous three winter seasons in the ski resorts. The amount of customers in Scotland peaked at 1.4 million for the 2007/08 winter declined to 1.1 million for the 2010/11 and 2011/12. With regard to five Scottish ski resorts, the overall statistical data has shown a decline of skiers, for instance, with the maximum of 660,000 skiers during the most successful winter season in 1998 and only 90, 000 skiers in 2007 (Bullough, 2011) and 9% decrease in skiers has been detected in 2010 (VisitScotland, 2010). In Switzerland the drop from the most successful and profitable winter 2003/04 was 5 million in 2011/12 (Vanat, 2014). Swiss ski resorts experienced an exceptionally warm winter in 2006/2007, that created financial challenges (Beniston, 2007) and led to a realisation that "climate change winters" like the one of 2006/2007 would happen more frequently (Luthe and Schläpfer, 2011, p. 249). Therefore, in 2012 it was decided to identify the reasons of this significant drop by having conducted a

fieldwork in both ski resort destinations focusing only on three winter seasons. The position of the researcher and justification of the choice concurs with Pearce's point of view; hence, both Switzerland and Scotland have been chosen due to their existed similarities, for instance, in the forms of challenges and differences, in the forms of various approaches to handle the occurred or occurring challenges. The revealed coping mechanism will benefit the knowledge, increase validity and reliability of the results and become attractive for publishers and future research. More detailed analysis of the comparative framework and methods will be demonstrated in the Chapters 3.9 and 6.2.

1.1.3 Aims and Objectives

The previous aspects described in the topic relevance and rationale part have illustrated a few gaps, inadequacies, uncertainties and challenges of the ski resorts in Scotland and Switzerland that need to be addressed. Hence, there are two aims of the research:

- To determine and analyse the factors as actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice.

- To develop a set of sustainability determinants for generic ski resort use.

The following objectives have been set:

- To discover an interconnection of objective and subjective factors of sustainability and its elements;
- To investigate potential impacts of changing environments, that might influence the profitability and sustainability of Switzerland and Scotland as the ski resort destinations;

- To examine and filter the sustainability determinants for generic ski resort use;
- To identify and evaluate systematic sustainability indicators to measure business sustainability of ski resorts.

1.1.4 Chapter Outline

This section outlines the content of each particular chapter of this thesis to provide a "navigation" of the process, milestones, justification and coherent chain of the undertaken methods and tools to achieve the set aims.

Chapter One – Introduction: This chapter outlines the research questions, the main objectives and aims. It assesses the rationale of the problem and demonstrates the starting "pillars" on the way to meet the research goals.

Chapter Two – Literature Review: This chapter provides a comprehensive overview about sustainability, business viability, SIs, models and paradigms, ski resorts' overviews and sustainability determinants and adaptation strategies. It reveals major challenges and debatable issues about the Swiss and Scottish ski resorts and offers a concrete justification of the chosen field work.

Chapter Three – Methodology and Methods: This chapter connects the established research aims and objectives with suitable methodological tools; hence, it unites a theoretical part with a practical one. It explains profoundly the methodological choices, acknowledges alternatives, implications and limitations of the methodological designs. In addition, it discusses the issue about reliability and validity of both quantitative and qualitative methodological stances.

Chapter Four – Findings: This chapter reveals the outcomes from the interviews in Switzerland and Scotland conducted in 2012 and 2013. The data has been coded by engaging NVivo software using a thematic analysis. Moreover, the consensus gained throughout the Delphi study had been displayed in this chapter by using Statistical Program for Social Sciences (SPSS) software.

Chapter Five – Analysis and Discussion: This chapter analyses the obtained data both from the interviews and the Delphi and links the empirical data to the literature and theory in order to meet two aims and objectives of this thesis.

Chapter Six – Conclusions: This chapter presents the main contributions to the field of knowledge, highlights the encountered limitations of this thesis and points out areas for future research.

Chapter 2: Literature Review

2.1 Introduction

The following chapter explores some debatable issues existed in the academic literature with regard to tourism and climate change; analyses critically a plethora of literature related to tourism and sustainability, its subjective (internal) and objective (external) interpretation, builds a connection between models and paradigms of sustainability indicators; looks at the main pillars of sustainability, its determinants and gaps; demonstrates the issues about ski resorts and examines the implications of the adaptation strategies implementations.

2.2 Tourism and Climate Change

Tourism is often viewed as a factor, which contributes to the economy of a country. There is an explicit assumption that the visitors of the competitive destinations are willing to spend more money, which will lead to increased GDP and economic growth in the destination, hence, the economic welfare will be higher. However, this does not necessarily reflect the actual situation – more visitors in the destination does not mean that they will spend more money there and the economic growth won't be generated by their contribution due to different reasons (Webster and Ivanov, 2014). Tourism is generally influenced by various factors and major tourism stakeholders such as tourists, tourism operators and destinations are at a constant need to detect any changes with regard to tourism. One of those factors is climate, which can be both a resource and deterrent for tourism. It plays an important role for tourists in a decision making process (a psychological influence) and has significance in overall travel experience (a physical impact). The decision making process is connected to pre-trip activities, for instance, destination choice, timing of travel, activity planning and insurance needs. The actual travel experience, which is also dictated by climate conditions, might be linked to activity choice, spending patterns, health and safety. Consequently, the post-trip experience in terms of whether to come back to the same destination or not, to recommend it or not is related to climate as well (Scott, et al. 2012). Thus, depending where a visitor is in the world, a demand for various tourist

products and services might be different throughout the year and one of the reasons for that are climate conditions (Smith and Stewart, 2014).

The interface between climate and tourism is very complex. In order to understand the connections and influence, it is significant to take into account all the major components of the global tourism system (tourists, source markets, transport systems and destinations). All these components will be affected by:

1. Direct climatic changes (e.g. lengths and quality of tourism seasons, operating costs, business interruptions);
2. Indirect climate-induced environmental changes (e.g. water availability);
3. Indirect climate-induced social-economic changes (e.g. political instability, economic decline, change in environmental attitudes);
4. Climate change mitigation policy (e.g. increase in transport costs, decreased accessibility to some destinations) (Scott and Lemieux, 2013).

The figure below demonstrates transparently the global relationships and connections between tourists, source markets, transport systems, destinations and climate change.

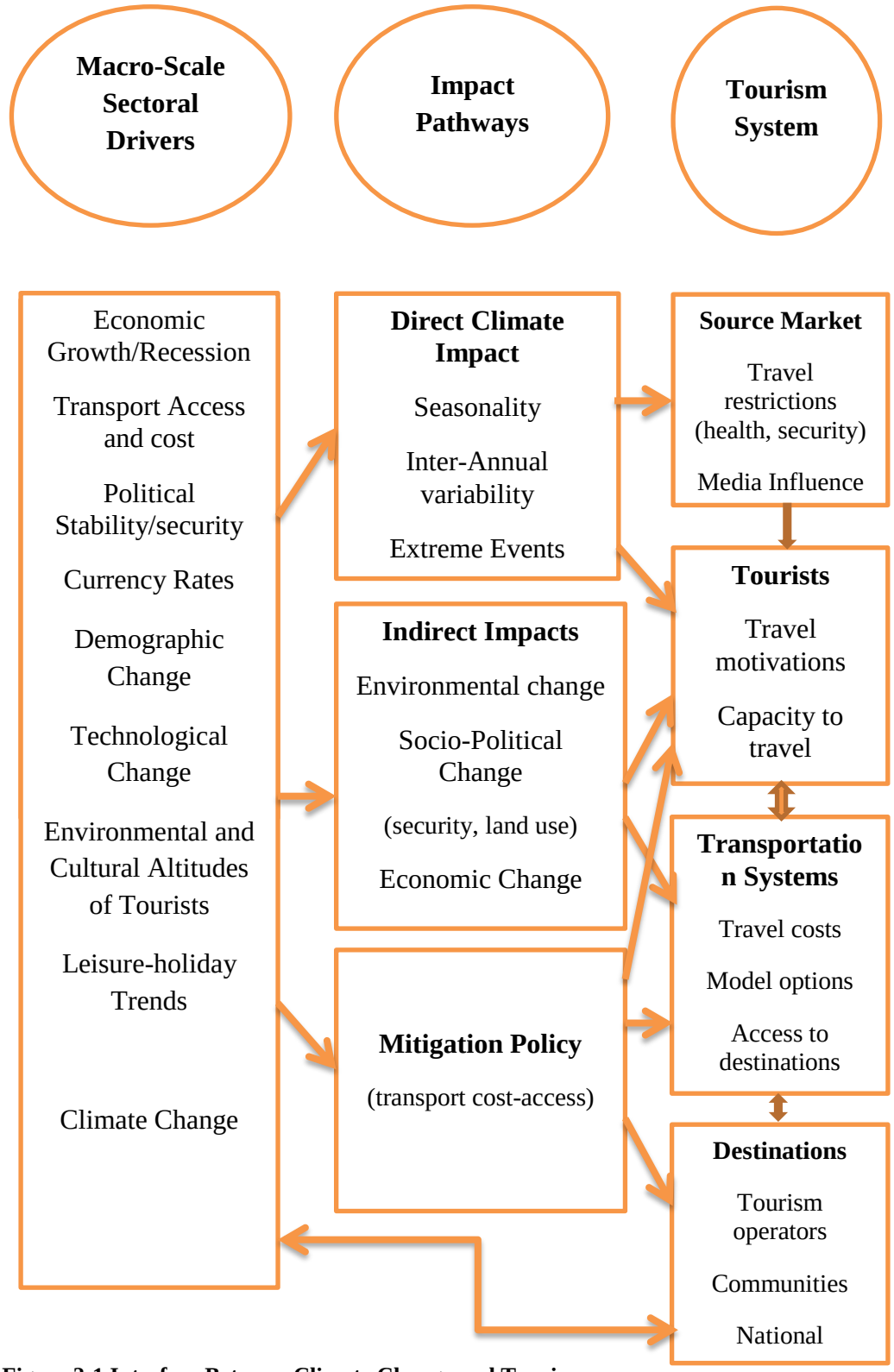


Figure 2-1 Interface Between Climate Change and Tourism.

Source: adapted from Scott and Lemieux (2013, pp. 244).

The demonstrated figure covers a few important aspects with regard to not only climate change, but also economic, political, social and cultural aspects of tourism, which will be discussed more detailed in the next sections.

2.3 Tourism and Sustainability

Tourism as a social and physical phenomenon comprises social, cultural, economic and ecological interactions. These interactions usually happen "en route to and in a destination" (Lovelock and Lovelock, 2013, p. 2), which is also someone's place (house, village, town, city, mountain, jungle, beach, and backyard). The interactions might have an impact (negative or positive) on the communities, economies and environment. The academic literature of tourism is large, more than 150 000 articles in total with approximately 5,000 relevant to sustainable tourism (CIRET, 2012, cited in Buckley, 2012, p. 529). The scope of an assessment is different; however, in general researchers tend to connect theoretical aspects of tourism (frameworks, models or paradigms) with the practicalities of sustainability in the commercial tourism industry. Its main proposition relies on "the axiom that both the tourism industry and, and sustainability, are real-world phenomena (Buckley, 2012, p. 529). Sustainable tourism needs both the sustainable growth of tourism's input to the economy and society and the sustainable use of resources and environment. Tourism development is both supply-led and demand-driven. A forecast of a need to develop tourist facilities and services may change due to a response to a growing demand or aim to stimulate tourist demand. The demand is an impetus for a tourist to take a decision towards travelling while the supply factors are the factors, which pull the tourist towards a particular destination. With regard to that, it is inadequate and unrealistic approach for any destination to presume that there will be always an increasing demand for its product despite any changes in the tourist market (Liu, 2003).

Tourism as one of the largest industries in the world is rapidly growing and becoming sensitive and vulnerable to climate change especially in the areas, where recreational activities are directly connected to the weather conditions, for instance,

winter-based tourism (WTO, 2003; Scott et al. 2006). There are about 80 countries in the world, where skiing is an important and valuable contributor to the tourism industry and economy in general. According to the most recent international report on snow and mountain tourism (Vanat, 2014) about 2,000 ski resorts have been identified worldwide. Apart from the main ski destinations, there are also smaller destinations, where skiing has been a part of a tourism industry for a long time, or it is developing at the moment, such as Eastern Europe and China, Algeria, Cyprus, Greece, India, Iran, Israel, Lebanon, Lesotho, Morocco, New Zealand, Pakistan, South Africa, Turkey and many more. The figure below illustrates a general overview of geographical locations of 2,119 ski resorts around the world with approximately 6,000 designated areas for skiing and around 6 million commercial beds in the mountains. Each colour represents the location of ski resorts geographically in the world map (Vanat, 2014).

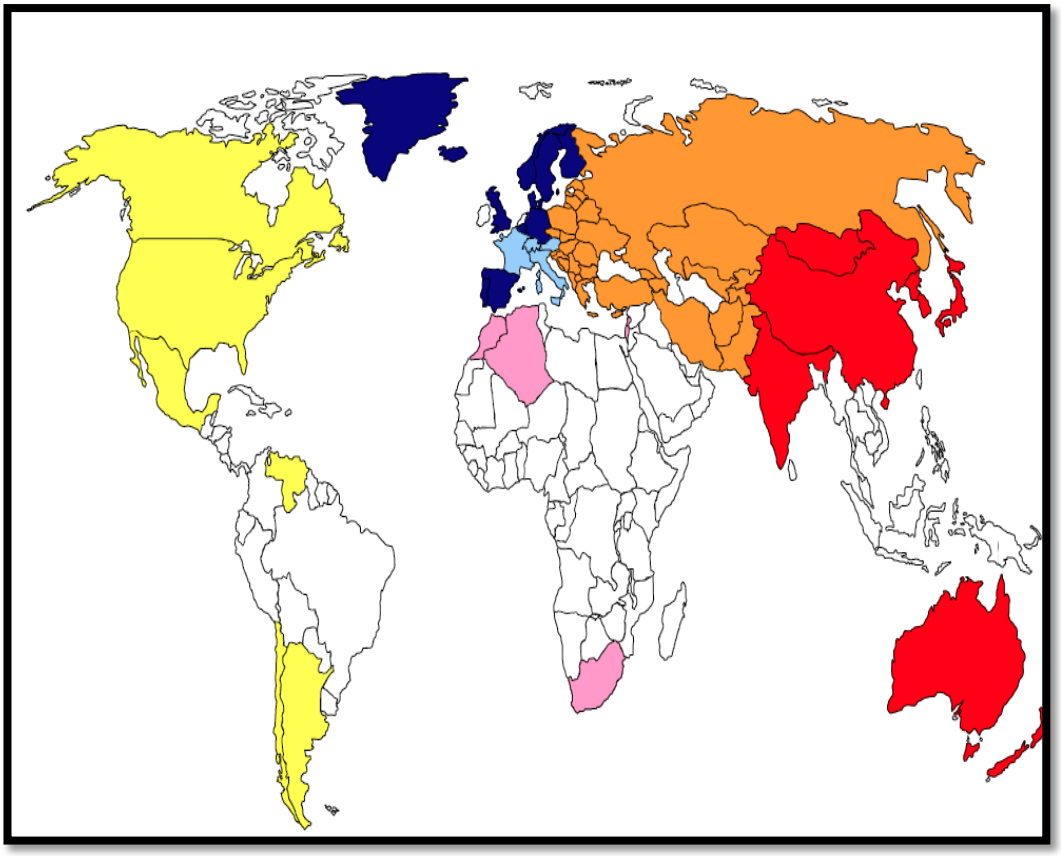


Figure 2-2 Overview of Key Industry Figures for Ski Resorts

Source: Vanat (2014, p. 7).

2.4 Sustainability and its Pillars

This chapter evaluates sustainability in the usual manner being adopted in literature - in the context of ski resorts it is an external (outer) sustainability and its components which, as objective factors, have an impact on their functioning. An in-depth investigation of academic literature revealed a lack of a clear definition of sustainability. Some authors like Smith and Sharicz (2011) after having overviewed numbers of articles claim that the existed definitions might create implications and confusion for any organization. Reinforcing that argument, "one company may be overhauling its business models to green practice; another interprets a sustainable business as a company that will survive next ten years". Thus, the whole concept seems to be like a "muddy pool" (Harrison, 1996, p. 71). From the personal perspective one of the possible implications of uncertainty might be a question how to adopt and implement in practice what seems debatable in theory. In fact, there is limited evidence of sustainability implementation in practice (Sharpley, 2009).

A classic start of an environmental movement, concern and a "fable for tomorrow" is associated in literature with the name Rachel Carson and her book "Silent Spring" (Carson, 1962) who raised important issue about nature and human beings, their interconnections and mutual impact without defining term sustainability itself but rather describing its main components. The term sustainability has been "popularized, abused, misused and occasionally utilized appropriately" since its first appearance by many authors, organizations and companies (Butler, 1996, p. 11) and, as a result, "poorly defined" (Tyrrell and Johnston, 2007). In the academic sphere there are a few definitions of sustainability. Noteworthy, a definition of sustainability should not be addressed without exploring the foundation of the concept of sustainable development and its gist.

One of the most influential and fundamental definitions of sustainable development was produced in the Brundtland Commission Report in 1987 (WCED 1987). According to the report "sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet

their own needs" (WCED, 1987, p, 43). The report provided the "catalyst" for much of the discussion and solutions connected with sustainability (McCool and Moisey, 2001). In 1996 there was a meeting organized by a number of experts, practitioners and researchers from five continents in the Italian town of Bellagio. The participants developed a set of guidelines towards the SD strategies and titled it "Bellagio Principles" (IIFSD, 1996). The assessment of the principles revealed that the developed postulates had a declarative character and repeated the existed statements on the databases about sustainability without offering practical solutions. In addition, a few scholars support the critics stating that the "Bellagio Principles" do not explicitly explain a vision of sustainability (Hardi and Terrence, 2007).

Quite a few scholars operate with sustainability principles developed by Gibson – so called "Gibson Principles" justifying that among all well known criteria these principles are derived from the collaboration of sustainability literature and practical experience (Gibson, et al. 2005; Gibson, 2006; Pope, 2006; Morrison-Saunders, 2006). An integrated approach of the principles seem to be profound and detailed, however, it failed to acknowledge an objective characteristic in terms of sustainability measurement such as sustainability indicators and therefore, from the personal opinion might not become a useful tool in practice especially for stakeholders and managers of ski resorts.

Liu (2003, p. 462) highlights that Butler (1996; 1999b), Harris and Leiper (1995) are among a few scholars who "dug deeper" to discover the difference between the terms sustainability and sustainable development stating that SD was so well defined and redefined in order to suit to everyone's agenda consequently, it became indefinable and meaningless. However, the majority of authors presume that the main emphasis should be focused on "sustainability trinity" (Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007), rather than continuing "a semantic debate about terminology" (Liu, 2003, p. 460).

Moreover, in 2001 the UNWTO did not alter the established definition conceptually but adjusted, paraphrased and supplemented it in terms of applying the concept to

tourism industry operation with the terms “present tourist” and “host regions” the needs of whose should be met (UNWTO, 2001). In addition, the UNWTO deciphered the concept of sustainability adding three key components: economic development, social impact and environment – “three legs of sustainability” (UNWTO, 2004; Newport, et al. 2003, p. 357). Three-dimensional triple bottom-line (TBL) of sustainability, as Smith and Sharicz (2011) have defined, should be the result of activities of an organization, which do not cause any negative impact on social and ecological systems and at the same time maintains business viability. Hence, from the researchers’ opinion, three dimensions have to be linked together and considered equally. Moreover, Davos Declaration about climate change and tourism proposed and confirmed a “quadruple bottom line” of sustainability: the environmental, social, economic and climatic component encouraging the policy makers to ardently adopt suitable policies that reflect the components (Davos Declaration, 2007, p. 2). It is arguable though that a climatic component should be separate and not a part of environmental segment because theoretically climatic component could be considered as an aspect and a part of the environmental one. However, Davos Declaration has distinguished those two elements.

In addition, a few scholars emphasize the importance of a political pillar of sustainability which is rarely recognized but essential because it may dictate and determine rules, strategies to other elements of sustainability (Brown and Essex, 1997; Ritchie, 1999, cited in Ritchie and Crouch 2003, p. 47). With regard to a political component Bullough proposes a weighty argument like VAT interpretation at a UK level and in his report it is highlighted that in Sweden, for instance, ‘‘…all ski lifts are considered transport infrastructure and therefore subject to a reduced GST rate of 6% tax rather than standard 12% GST’’ and in France - 5,5% (2011, p. 47). Whereas, in Scotland ‘‘the funicular is zero-rated as a transportation system but VAT for all lift and tows is charged at the full 20% VAT rate’’ (2011, p. 35). An interpretation of that reveals a need to reduce VAT rate for the Scottish ski industry, thus, saved money could be used for ski resorts needs to increase their business sustainability. It means that the concern has to be raised in Holyrood and Westminster at the legislative levels in order to make Scottish ski industry more

competitive and sustainable. The debates prove that despite the fact about VAT being an economic attribute of three-dimensional triple bottom-line, it is directly connected to the political pillar of sustainability, which, unfortunately, failed to be included in TBL and left out from QBL but has to be taken into account as political component of sustainability.

Moreover, Hunter (1997) states that a balanced approach to three-dimensional triple bottom-line of sustainability with its economic, social and environmental elements is not realistic and all pillars have to be treated differently. The researcher took into account both notions; however, it seems that for one destination an influence of one of the TBL components can be more significant, for instance, a dependability of a resort from the weather (seasonality), for another - the economic element is worth a major consideration due to inflation and economic instability in a region that lead to a weakness of tourism sector in general. Hence, due to the nature of an organization, its agenda and external factors the balanced approach is a challenge to maintain. Nevertheless, in both cases all elements will be equally treated despite the predominance of one over another. Therefore, the aim of the research is to modify the existed set of sustainability determinants for a generic ski resorts use avoiding an individualistic approach. Thereby, sustainable development is a process of minimizing environmental and cultural impacts, optimizing visitor satisfaction and maximizing long term economic growth for the region where tourism is developed (Bramwell and Lane, 1993; Lane 1994) with maintaining the destinations' well-being (Lu and Nepal, 2009).

A contemplation of the definition and combination of its components make some scholars realize that in order to reach sustainability there is a necessity to build a direct link with a concept of sustainable entrepreneurship (Schlange, 2009). In practice for managers of ski resorts sustainability might be interpreted in a way that new opportunities have to be identified, grasped and implemented. Therefore, according to Shane and Venkataraman (2000) entrepreneurial behavior should be oriented towards the opportunities. Nevertheless, this position is debatable and needs a further exploration in a fieldwork in terms of an influence of external factors and

entrepreneurship. In other words, the last two scholars wonder, whether any threat that might occur be used as an opportunity to improve business and be converted to an adaptation strategy for an organization.

2.4.1 Models and Paradigms

Buckley (2012) produced a comprehensively critical overview about sustainability in research and practice, where he had stated that both practical interest and research progress related to the definitions of sustainability, unfortunately, until now was low: despite the attention towards the environmental component of TBL in practice, the research progress connected with a lack of data and incommensurable parameter is highly insignificant. Some authors state that there is a need for a comprehensive methodological framework to maintain sustainable practices (Muller, 2004; Cernat and Gourdon, 2007; Alonso and Ogle 2010). Others suppose that Hunter's adaptation paradigm (Hunter, 1995) is the "panacea" to all implications and collusions. Miller and Twining-Ward (2005, p. 150) acknowledged a need to engage both experts and non-experts to increase a value of forming an indicator with the benefits to be obtained "from community visioning and stakeholder involvements in indicator selection". Scerri (2010) having critically evaluated the field, claims that the concept of a true sustainability may be impossible to achieve in practice due to the lack of common measurement of sustainability and well-established policies. Velazquez (et al. 2011) reinforced that position by stating that neither government, nor business organization has enough knowledge and skills for reaching sustainable development because the concept is too broad. Aras and Crowther (2009a, p. 23) point out that "…many organizations simply create an image of sustainability to please stakeholders without really committing to change…" that will benefit all components of TBL emphasizing there are committed to environment (the environmental pillar), contribute to local economy (the economic pillar), hire mainly inhabitants of a particular area (the social pillar).

Another model of sustainability characterizes a long-term industry objective and describes unavoidable dynamic trade-offs in the system (Johnston and Tyrrell, 2005).

The proposed model seems to be realistic as it has been practically used; however, it contains a pure quantitative approach taking into consideration the focus on the outcomes from the mathematical formula. The strength of this model is a focus on a sustainable profit over long term objectives, which is an advantage over those models which are only short term related and as Smith and Sharicz (2011, p. 73) emphasize that "…organizations must make a shift from a short-term perspective to a long-term perspective". For that purpose a qualitative analysis is necessary to identify "trade-offs" like which marketing segments are dominant in a particular destination, tastes and trends: hence, a further research has to be conducted in terms of customers' profiles to create and implement any long-terms strategy. According to Butler (1996) a major problem of the concept of sustainability is a time frame: it takes a considerable amount of time to be sure that any activity is sustainable especially within such a dynamic field as tourism; in another words, long term strategies are not valid. Liburd and Edwards (2010) support Butler (1996) adding that sustainability is achievable over a period of time fails to consider that change as a process is a norm nowadays rather than an exception.

It is stated by a few academic scholars that some academic studies show a lack of adaptability as a gap in common strategic planning for coping with the implications caused by the economic, political and environmental forces (Mirfenderesk and Corkill, 2009). In order to be truly sustainable any management approach should be "proactive" one (Spangenberg and Bonniot, 1998, p. 27), which could mean to use any opportunity from challenges, grasp it and endorse by offering new strategies to reinforce viability of an organisation. A critical issue is that before planning any strategic changes potential risks of revenue loss or unsustainable environment's outcomes and other factors should be solidly identified and for managers it is recommendable "…not to chant their mantras and sit in their caves", but behave proactively (Watson, 2001, p. 386). Hence, the occurred problems might be caused not by the highlighted objective factors but simply by the internal mistakes or mismanagement. From the environmental approach, as Wittneben and Kiyar (2009) state, close attention should be given to the analysis of the climate situation and its impact, actual and potential complications in the countries, where the weather

conditions are linked inseparably to the business itself. The essential arguments supporting the idea of action needed with the challenges ahead and customers' involvement due to the climate change is being suggested by Kokkranikal (et al. 2003); Patterson (et al. 2006); Frochot and Kreziak (2008) and Filho (2009). Daniel Scott is one of the most influential scholars who raised lots of issues regarding reinforcing ski resorts' sustainability. The issue the researcher of this thesis took on board as one of the aims was to pursue and explore profoundly ski resorts' probability to generate enough profit during the most economically crucial periods Like (Christmas-New Year and spring school break holidays). He also emphasized that most of the studies had been focused on customers' perception and behaviour regarding climate change without assessing challenges for ski industry and its economic viability (Scott, 2006; Scott, et al. 2006; Scott and McBoyle, 2007; Scott, 2008; Scott and Becken, 2010; Scott, 2011; Scott, et al. 2012). Unfortunately, the research in this area is relevantly limited (Alonso and Ogle, 2010) and needs a further investigation.

Nevertheless, while addressing any sustainable model one issue arises: what tools and techniques to measure sustainability are, establishing a question – is it possible to develop and use sustainability indicators for every ski resort? Some authors suppose that sustainability can be only implemented successfully if there are useful, reliable and comprehensive sustainability indicators available (Lu and Nepal, 2009), which will be covered below.

2.4.2 Sustainability Indicators – Critical Assessment

It takes a long period of time to be positive about any activity to be called sustainable (Butler, 1996) and it is a subjective process unless it is based on an aggregate of objective characteristics, such as indicators. Indicators are needed to monitor if standards are being followed. If not, management actions might be required to detect any violations. According to Manning (p. 670, 2011) indicators are "social, resource, or managerial variables defining the quality of settings and experiences". Indicators are measured to discover standards of quality. A significant number of governmental,

non-governmental and international organisations such as the European Environment Agency (EEA), European Union (EU), Organisation for Economic Co-operation and Development (OECD), United Nations Development Programme (UNDP), UNEP, the UNWTO and the World Bank have all been involved in developing indicators (Miller, 2001; Rebollo and Baidal, 2003; Choi and Sirakaya, 2006; Schianetz and Kavanagh, 2008).

The UNWTO took a leading role and established a new approach to indicator evolution. Appendix 2 provides an overview of 11 core indicators with the supplement towards the mountains' areas as a basic framework for sustainable tourism (UNWTO, 1996; Weaver, 1998). In 2004 it developed a total of nearly 50 issues and 25 suggested indicators applied to 18 different types of destinations, providing an immense and rather overwhelming monitoring resource of more than a thousand potential indicators (UNWTO, 2004a). There are different definitions of indicators; however, the researcher uses the one offered by Dubois (2005) because it contains both qualitative and quantitative components. Therefore, an indicator is "a variable which can take a certain number of values (statistical) or states (qualitative) according to circumstances (temporal)" (2005, p. 141). The suitable indicators are those that respond to the threats regarding sustainability (UNTWO, 2004a). Indicators can help destinations to determine their sustainable tourism objectives, establish and track progress and identify long term strategies for future (McCool and Lime, 2001). The challenge is to adopt them in practice and use similar formulas when a comparison analysis needs to be undertaken. Factors that may have an impact on selection of working indicators in particular destination are "policy relevance, the kind of approach to sustainability, measurability, financial constrains, stakeholder interests, level of public support and politics" (Weaver, 2008, p. 27). Appendix 2 demonstrates the core SIs offered by UNWTO. All indicators are categorised according to the themes. However, the indicators are descriptive, not precise, too wide and reflect purely the external sustainability of resorts as destinations and leans towards the outside environment predominantly rather than taking into account factors, indicators of resorts' business (internal) sustainability and viability, therefore, the UNWTO SIs are not the most suitable merits for the ski resorts at all.

They could only be used by the ski resorts assessing an environmental, economic, politico-social and cultural impact, thus, externally, but, regrettably, not internally.

In general, indicators are influenced directly or indirectly by many factors: legal and fiscal systems, public moods, stakeholders intentions and with regard to ski resorts a set of business sustainability indicators might be more beneficial than simply commonly used sustainability indicators, which are too descriptive and broad (Spangenberg and Bonniot, 1998).

Traditionally, the tourism industry has evaluated destination performance using conventional tourism indicators such as arrival numbers, length of stay and tourism expenditure (Ceron and Dubois, 2003). These figures have been criticized for the lack of consistent methodology that could have been implemented by countries to define and count visitors and, therefore, lack of comparability across destinations (Bell and Morse, 2010). These last authors concluded that an increasing number of scholars are stressing a need for the development of more comprehensive sustainable tourism indicators that can build a connection between tourism and TBL of sustainability (Inskeep, 1991; Butler, 1993a; Coccossis, 1996; Dymond, 1997; Goodall and Stabler, 1997; Mowforth and Munt, 1998; Weaver, 1998; Swarbrooke, 1999; Weaver and Lawton, 1999; James, 2000; Miller, 2001a). Hence, the shift from using conventional indicators to indicators of sustainable tourism is very challenging due to a lack of empirical experience (Miller and Twining-Ward, 2005); nevertheless, it will derive change rather than just being an indicator of a situation. The “Bellagio Principles” (IIFSD, 1996; Weaver, 2008) touched in a frame manner an issue with indicators, however, the criteria are still general, unclear and too theoretical. Unfortunately, as it had been identified, the literature about tourism did not devote significant attention to the indicators issue in terms of their realistic implementation. Besides that, sustainability indicators are not the only tools of measurements. There are also various instruments of measurements like Impact Assessment, Environmental Auditing, Carrying Capacity, Sustainable Benchmarking Tool, Certification and Eco-Labelling (Muhibudin and Mohamed, 2012).

Miller (2001) has conducted a comprehensive research and initially aimed to develop generic indicators that could be applied to all tourism resorts. As a basis UNWTO indicators were used (Appendix 2) along with a few others derived from the academic literature published before 2001 and the list of 16 out 24 SIs had been generated. Subsequently, the research has become a part of a broader project to develop indicators for consumers in order for them to use SIs for choosing their holidays (Miller, 2001a). In the context of the current research, the scope of the aforementioned projects was significantly different; first off the initial project has looked at all tourism resorts, whereas, the conducted work has a narrow focus and limited to only ski resorts; and second of all, the developed SIs from the subsequent project had been investigated from the customers perspective and towards the customers' satisfaction, whereas, the current research has examined Scottish and Swiss ski resorts and established the entirely different goal - to reinforce ski resorts business sustainability and viability.

Overall, the development of sustainability indicators had a few changes. Lu and Nepal (2009, p. 13) highlighted three patterns over the period of 15 years. Firstly, the scale of SIs has shifted from "project-oriented" to "destination-oriented", which demonstrates the trend of their generic use. Secondly, the content became broader: it includes not only quantitative but also qualitative indicators, which was one of the considered factors to apply mixed methods for this research in particular. And thirdly, different frameworks have been used to develop SIs: Limits of Acceptable Change (Stankey et al. 1985), Visitor Experience and Resource Protection (Manning, 2001), Destination Lifecycle and "Visitor Impact Management" (Lu and Nepal, 2009, p. 13). However, these frameworks are limited because their main focus is on visitor impact where the considerations of indicators from the organizational view are left behind. Müller (et al. 2010) offered a set of stagnation indicators which are less general and narrow towards a winter destination and might lead to a creation of rejuvenation strategies to sustain business in a long term. The attempt did not entirely fail, however, the interviews revealed an unfortunate pattern of slow passive actions taken by mangers of ski resorts, for instance, as long as overnight stay do not drop

radically, destination managers, ski resorts managers behave passively. Hence, ski resorts destinations are later adopters of effective innovative strategies.

Nevertheless, some scholars claim that before selecting a suitable indicator or a model of sustainability indicators for sustainable tourism a number of implicit determinants have to be explored and provide a framework for a future selection (McCrum et. al, 2009). For that purpose the field work has been conducted in Scotland in Loch Lomond and the Trossachs National Park and Cairngorms National Park, where the relevant park authorities have been engaged in developing sustainability indicators. Participants evaluated factors (determinants) that might have been of significance before choosing a model of SIs. The framework incorporated seven implicit determinants: adaptation strategies, community participation, investigative stance, sectoral comprehensiveness, spatial scale, sustainable tourisms stance and temporal scale. All of them were tested and the results revealed that some of the determinants were viewed as more significant than others. In addition, connection between the tested determinants according to the field work data did consider being valuable in the process of selecting a model of SIs, which had resonated with the common literature about SD and SIs (Miller, 2001; Miller and Twining-Ward) signifying that a subjective contemplation and determinants' interpretation among the stakeholder groups plays a significant role in the selection process. Whereas, the empirical data here has demonstrated an opposite – the stakeholder groups' personal interpretation of the determinants is not important. A failure to acknowledge its importance might create situation when different groups of stakeholders or managers are not concerned about an equal understanding of what an indicator should measure and what the measurements mean (McCrum et. al, 2009). An instant question arises how to measure effectively in practice what seems to be unclear in theory. The scope of the research was limited to only two national parks in Scotland and only 7 determinants, however, provided a valid and essential contribution to the field of knowledge and became a catalyst for the current research by expanding the list of determinants (Appendix 6) and exploring the determinants further and among a different target – five ski resorts in Scotland.

In summary, Butler (1999b, p. 16) contends that without indicators the term ST is "meaningless". There is a criticism about indicators in the academic literature: issues with scale, differing interpretations (Hughes, 2002), indicators are difficult to assess (Miller, 2001), use of indicators can also lead to over-dependence on quantitative measures (Miller and Twining-Ward, 2005), wrong selection of indicators can lead to negative consequences on the monitoring system (Choi and Sirakaya, 2006), practical effectiveness is very low (Fernandez and Rivero, 2009); inappropriate indicators which have nothing to do with ski resorts' operations and profitability, for instance, season length (Scott, et al. 2012). It seems quite likely that such an indicator as season length has a distant merit towards ski resorts' profitability because it does not measure it precisely and accurately. It is appropriate in this context to recap both aims of the research: the first one is connected to the ski resorts' profitability which influence business sustainably and viability and the second one – targets to develop a set of sustainability determinants in order to choose a model of SIs for generic ski resort use. Due to examined scholars' positions about indicators' complexity and comprehensive orientation rather than individualistic and narrow approach and personal interpretations what has been identified as a gap, mishandling, lack of measurement became a trigger to take this further and investigate it empirically.

2.5 Business Sustainability and Viability

This section is dedicated to an endless debate and a search of a consensus by dividing what normally seems to be a united term "sustainability" in two various types: an outer (external) sustainably and inner (internal, business) sustainability. The trigger of the separation and profound analysis of the term was pulled by Bullough (p. 46, 2011), where he uses a sentence like "…facilities will be developed with emphasis on the future sustainability and viability of the individual businesses rather than economic benefit of the wider area". The directly quoted phrase allowed providing a subjective interpretation with an acknowledgment of being biased and analysing with an accurate precision each element's meaning. By 'future sustainability and viability' can be presumed that an author implies an inner sustainability of "the individual

business" (ski resort). When he mentioned "economic benefit of the wider area" an interpretation can be made towards the economic element of QBL of an outer (external) sustainability.

There are a few attempts of scholars to raise concern about business sustainability of ski resorts but only in the form of analyzing a potential impact of climate change on the ski industry. For example, Müller (et al. 2010, p. 28) operate with the term ''rejuvenation strategies" to prolong a winter destination life cycle by analyzing a competitive environment with all its obstacles. What the authors call business rejuvenation in this thesis is termed as business sustainability in the form of its viability due to their identical meanings. In addition, Bullough (p. 41, 2011) noted that 'there is a need to secure a sustainable business model in ski resorts' which will benefit ski resorts' viability in a long run. Scott (et. al 2012, p. 191) use directly a term "business sustainability" during a discussion about climate change and its consequences for the destinations, implications for touristic activities there and the capacity of ski business to exist and survive. However, for this research a debate about components matters only to an extent of clear vision that sustainability in general might be interpreted as an outer (external) sustainability and inner (internal) sustainability. To identify their interconnections, objective and subjective factors influencing sustainability was one of the objectives and challenges of this research.

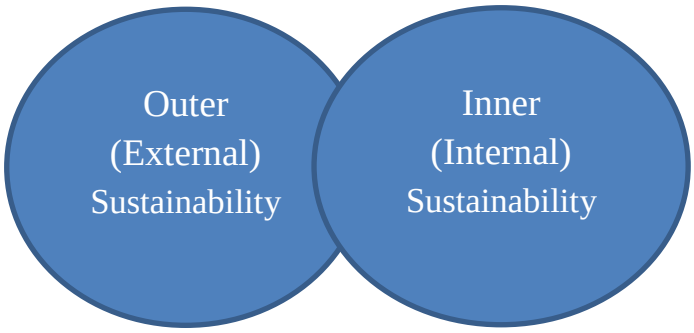


Figure 2-3 External and Internal Sustainability

To reinforce a debate about different understanding of sustainability and its possible classification with a connection to business viability a discussion about stakeholders will provide a coherent and adequate connection. The key stakeholders of ski resort operations are "ski operators/businesses, residents/employees, environmental groups,

government/regulatory agencies, skiers (Herremans, 2006, pp. 129) and also banks, investors, insurance companies, environmentalists (Scott, 2006). In the academic literature the classifications of stakeholders have been fulfilled according to their motivational factors, for example, there are "individuals, businesses, governments, communities and non-governmental organizations…" and the factors are "quality of experience (skiers/riders), economic well-being (ski area operators, ski industry associations, communities, governments) and environmental and social sustainability (ski area operators, ski industry associations, communities, governments, non-governmental organizations)" (Scott and McBoyle, pp. 14, 2007). There is a direct connection here with the elements of sustainability and it is transparent that the stakeholders are put into the categories of economic, environmental and social sustainability, hence, they are under the external (outside) sustainability and therefore, can be evaluated from the internal point of view by being clearly a part of the mentioned categories and need to be derived from them.

There is no commonly accepted narrow set of sustainability indicators which could have been predominantly applied towards the ski resorts and their survival rather than their impact on the outside factors. With regard to that the contribution has been made to the field of knowledge, which will be covered in the chapter findings and discussion.

2.6 Ski Resort: Conceptual Background

2.6.1 Definition

For every piece of research a working definition plays a significant role: it provides an explicit understanding of phenomena and all its elements. Very frequently there is a debate about it and a choice is based on a subjective interpretation of the researcher as long as the definition reflects in depth its cognitive purpose and uncovers comprehensively a content and function.

For the purpose of combining three elements of resorts in synergy the following definition has been offered: a resort is "a recreational attraction that draws guests to the facility, provides housing, food and beverage facilities that cater to people away from home and offers activities to occupy guests during their stay" (Mill, 2008, pp. xv). The demonstrated definition has been formulated based on three fundamental human desires: desire to take a vacation, to pursue recreation needs and entertainment and desire to travel to interesting places and new destinations In that manner, a ski resort, in fact, is a recreational place that attracts customers to spend their spare time away from home (abroad or within a country of origin), offers accommodation (during a day or night), provides food, beverages and entertainment.

Subsequent to the empirical study, the working definition was modified taking into a consideration, for instance, that some of the ski resorts stopped being purely winter sports oriented and thus, in the chapter findings and discussion a new definition was generated. In addition, a critical issue here is that not all ski resorts might completely match this definition and it is not a surprise because they can be different according to the types.

2.6.2 Types of Resort

There are various criteria to categorize resorts: location to the targeted market, offered setting and amenities and, finally, a mix of accommodation facilities (Mill, 2008: Scott, 2011). For this thesis the intention was to identify a ski resort according to its type by having filtered it through all three essential attributes. Consequently, according to the location to the targeted market' criterion a ski resort can be categorized as a destination resort or non-destination resort according to its remoteness. The same author suggests that non-destination resorts are within two- to three hour drive, for instance, from the place of skiing. In this case some Scottish and Swiss ski resorts, as it will be pointed out further, meet that criteria and should not be called a destination resort, others – might be both simultaneously, a destination and non-destination resorts (within two- to three hour drive). It is debatable but not problematic issue because the analysed criterion is not a rigorous one. A second categorization is done according to amenities offered in venue and its setting: resorts

can be “either ocean resorts, lake/rivers resorts, mountain/ski resorts or golf resorts”. There are also new trends in this regards, resorts can be health spa oriented (with fitness facilities), soft adventures focused (like wild-game hunting), gaming resort (casino) and ecotourism (for example, a trip to a rain forest in Amazon) (Mill, 2008, p. 9). The last indicator of a type of resorts is a mix of accommodation, however, the researcher preferred to limit a theoretical categorization of this element because specifically for the ski resorts this element is not essential as for other resorts in general. Besides, the last element will be investigated in the findings chapter because this criterion causes lots of implications and influences directly profitability, hence, business sustainability and viability of a ski resort in general.

2.6.3 Ski Resorts Background

As it had been mentioned previously, there are about 80 countries in the world, where skiing is an important and valuable contributor to tourism industry and economy in general. Among Western Europe, Eastern Europe & Central Asia, Asia & Pacific and America, the Alps are the biggest ski destination in the world, “capturing 45% of skier visits” (Vanat, 2014, p. 11). The following figure presents in colours the geographical areas of all ski resorts in the world (their locations):

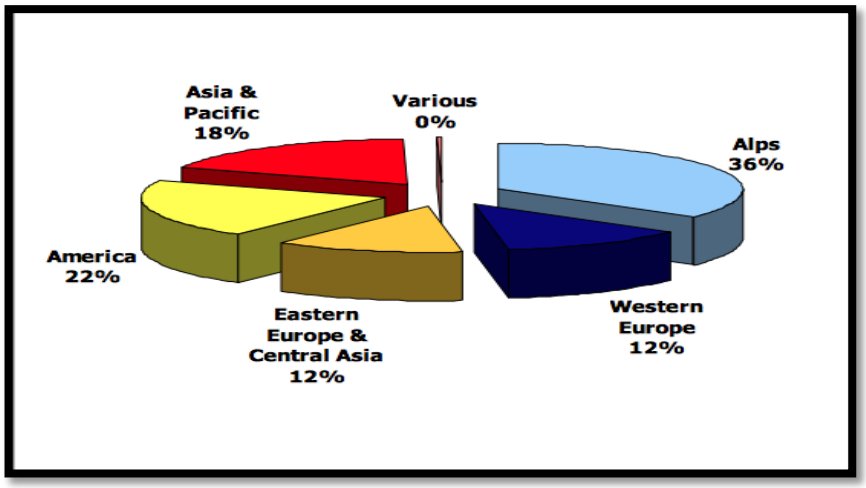


Figure 2-4 Ski Resorts Overview 2014

Source: Vanat (2014, p. 8).

As previously mentioned in the introduction (for the purpose of developing a coherent link between the sub chapters), mountain environments cover 27 per cent of the land surface. Mountains are located in all continents and attract tourists with different motivations according to a variety of activities a destination is able to offer (Buckley, 2008; Scott and McBoyle, 2007). The further from the equator the mountains are, the lower that altitude at which snow arises and the implication of that might create certain problems (Körner, 2003). Ski resorts in general face challenges with regard to sustainability and its measurement (Buckley, 2008; Mill, 2008; Valls and Sarda, 2009; Pickering, 2011; Scott, et al. 2012; Holden and Fennel, 2013; Pickering and Morrison, 2013). The mountain resorts are in constant need of ski equipment, lodging and food facilities, transportation and recreational places. A failure to provide any of them might influence profitability, business viability of a ski resort and also divert customers elsewhere (Clark, et al. 2006).

2.7 Ski Resorts Implications

Vanat (2014) sets a number of challenging issues about ski resorts around the world and frames them in one general category: a long term growth in order to stimulate the market and gain non-skiers and converting them to loyal customers, which is poorly done. An incapability to take proactive actions for the long-term growth might lead towards a loss of financial stability and internal sustainability of a ski resort. Moreover, there is a diversity of factors that influence or might influence profitability and sustainability of ski resorts. Under the concept of sustainability with its QBL an economic, environmental and socio-political elements are significant for business to survive in a long run. As it has been previously referred to all components were equally considered and treated in this thesis especially on the stage of the qualitative data collection avoiding a predominant influence one over another. However, an example of economic aspect can be an exchange rate or strength of one currency over another; environmental – climate change may alter routine ways of operation, for instance, ski resorts nowadays endeavour to start the ski season not in October or November but early/late December or operate with less snow (Scott, 2006); socio-political – Government policies towards the industry that become a matter of concern

to implement or inhabitants' resistance of a particular ski resort against tourism, like in the French ski resort in Abodance against converting it to cultural site (Suchet and Raspaud, 2010) or 20% VAT for the ski industry in Scotland (Bullough, 2011).

Mountain areas are sensitive to any changes of the weather. Implications of that might be, for instance, less snow, too much snow, receding glaciers, melting permafrost (the permanent solid layers of ice) and landslides. A climatic component is only one of many prerequisites influencing snow tourism in particular ski resorts, as the snowline recedes (Cooper et. al, 1998; Pozzi, 2011). Moreover, without a suitable amount of snow profitable ski tourism will barely be possible. "Mountains without snow are like summer without sea" (Bürki, et. al, 2003, p.1). Therefore, climate change evaluations have produced two methodologies for ski resorts destinations to predict future change in snow conditions and operational indicators: ski season length and snow-reliable areas (Scott, et al. 2012).

Comparatively little research has been conducted on tourism at ski areas during the summer season. A few scholars attempted to analyze motivations of summer visitors at an Alpine Ski Area in British Columbia, in Eastern North America, in the Australian Alps, Northern-Sweden ski areas and in the Austrian Alps. The findings revealed some growing activities as hiking and mountain biking in the summer months connected with a popularity of using chairlifts. In addition, according to the motivational factors analysis the data showed that it is a colossally difficult task to change an image or perception of a ski resort winter destination to a summer oriented destination (Needham, et al. 2011; Scott et al. 2006; Pickering and Morrison, 2013; Brouder and Lundmark, 2011; Steiger 2012). The confusion in customers' minds occurs, for instance, when summer season is perceived differently like in the case of the Australian ski resorts: winter season there starts normally in June or July, which is generally viewed as the summer time. Therefore, ski resorts in Australia might have to primarily work more towards the Australian image of the country with ski resorts (but during summer time), but, secondarily, advertise that they operate during the commonly known summer season, which in their case, is a winter time (Pickering, 2011; Pickering and Morrison, 2013). However, a vast number of journal

articles are dedicated to summer use of ski resorts facilities as a future plan or a temporal measure as a part of adaptation strategies but not something that needs to be implemented on the constant basis.

In addition, the academic literature and different sustainability projects are limited to the angle of external sustainability, perceptions of visitors towards sustainability of ski resorts ignoring completely the viability of ski resorts and their perceptions. Hence, it became significant to develop a discussion and conduct a fieldwork towards the internal sustainability which the researcher defines as the inner (business) sustainability or viability for ski resorts to survive in a long run. Scott (et al. 2006) strongly emphasizes that an evaluation of implications caused by an external environment (TBL of external sustainability) has to be given a high priority in terms of competitiveness and profitability (one of the aims of the current thesis) of organizations like ski resorts because not only the companies themselves are interested in this data but also corporations and investors who try to forecast financial risks. The evidence also shows, for instance, in 2012 the project "Perceptions of sustainability: the Oregon ski industry" was focused only on traditional sustainability issues essential for outside institutions and components but not for the ski resorts themselves (Phillips, 2012). The project addressed specific aspects like environmental stewardship, recreational programs towards the National Forest, managing public land in the public interest, fulfilling the National Forest Service mission and contributing money to the Oregon economy. Ski resorts in general are called the tenants of sustainability and "on their shoulders" lie a tremendous weight of responsibility to fulfil this socially politically environmentally and economically vital role, however, a significant disagreement arises in terms of forgetting to evaluate issues of business sustainability and viability because without that the tenants might disappear at all and who is going to act as a tenant? Therefore, the author shifted a traditional focus towards the ski resorts primarily and conducted the interviews from that precise perspective including, of course, what is topical and up to date in the literature, the issues related to the outside sustainability but much less than challenges connected to a business sustainability and viability of a particular ski resort in order to fill a gap in the empirical studies and academic research.

In 2005 a research project was undertaken with the title “SkiSustain” to analyze thirty six ski areas in Austria, Switzerland, France and Italy. An objective was to develop a sustainability management program for the ski destinations as a response to global change and afterwards many ski resorts of the Alps experienced an exceptionally warm winter in 2006/07 (Beniston, 2007). In the end, the perception and experience of twenty ski managements in four Alpine countries were examined having engaged a pure qualitative approach with the semi-structured interviews and finally, the thesis had been produced in 2008 (Luthe and Roth, 2008). A comparative analysis of the research questions, aims and objectives, findings and conclusions of the project “SkiSustain” with the current thesis has shown that some of the data might be revalidated due to the discovered similarities in the findings, however, the chosen mixed methods approach, diverse research objectives and a narrow more in-depth mechanism with a few novelties allowed contributing more into the science by having completed an original piece of the academic work. From one side, it may be stated, that the previous project had been partly carried on in this thesis, from another side, a different scope was chosen, a new set of the research questions were established and asked, the combination of qualitative and quantitative tools were used and, more importantly, only one resort destination (Davos) with its 5 major ski resorts in Switzerland had been comprehensively examined with relatively different outcomes. The detailed critical comparison of both destinations will be covered in details in the chapters dedicated to the discussion (5.1) and comparative analysis (6.2).

2.8 Ski Resorts Adaptation Strategies

In order to show resilience rather than sensitivity to climate change, ski resorts should implement adaptation measurements (Bicknell and McManus, 2006; Scott, 2006; Del Matto, 2007; Pozzi, 2011). A more holistic approach needs to be implemented in the forms of adaptation strategies as measures for diversification and resistance to a rapidly changing environment (Dawson and Scott, 2010). One of the

most comprehensive schemes of strategies has been proposed by Bürki (et al. 2003). The figure below illustrates the adaptation strategies.

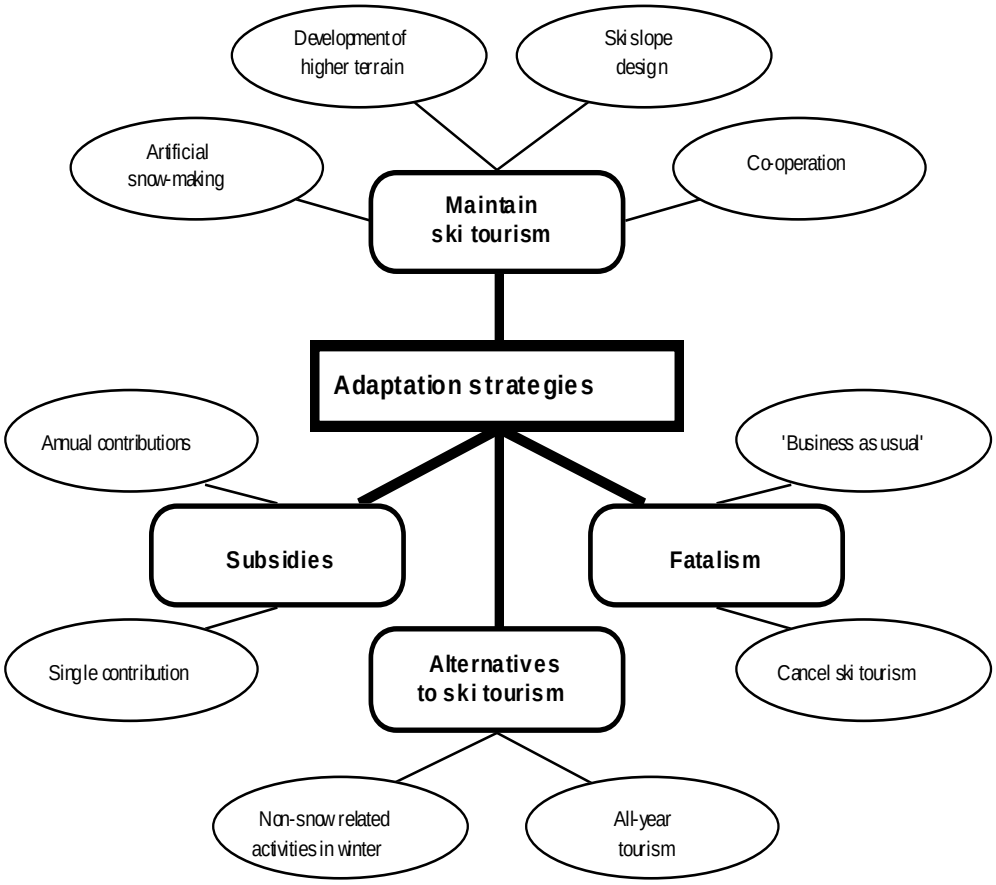


Figure 2-5 Adaptation Strategies

Source: Bürki, et al. 2003, pp. 7.

Moreover, some of the implemented adaptation strategies quite frequently have various implications, for example, in the town of Abondance in French Alps, a small ski resort has been converted to cultural tourism site. It has created a public resonance and resistance with lots of discovered issues. Eventually, the government initiative in collaboration with the ski resort managed to change the scope of the business for the financial purposes taking into account purely an inner (internal) sustainability's component like business viability of the ski resort completely

ignoring the social component of external sustainability. In this case the social component of the external sustainability was the negative opinion of the inhabitants of Abondance against the new cultural tourism site (Suchet and Raspaud, 2010). Nevertheless, even the academic literature suggests (Smith and Sharicz, 2011) to take into a serious consideration not only the simple profit-related component of the internal sustainability (the financial viability) of the business operation, but also the social attribute of the TBL of the external sustainability (an opinion of a population of a certain territory) as well as the environmental one (an impact on a territory). To prevent similar situations in the future, it might seem reasonable to acknowledge and consider both internal and external elements of sustainability prior to any implementation of a strategy in order to avoid a situation when for a sake of attaining something positive, a worst unpredictable outcome takes place and it might be irreversible like in Abondance. In this regard, identical questions were raised for the Scottish and Swiss ski resorts to meet the first aim of the thesis and resolved after the conducted field work accordingly.

Adaptation can be defined as actions need to be taken in order to reduce, moderate, and adjust to the potential or actual negative effects of climate change (Markandya and Chiabai, 2009). The demonstrated scheme of the adaptation strategies have to be evaluated comprehensively both in theory (using a supporting literature) and in practice (conducting a field work).

2.8.1 Artificial snow-making

There are a number of snowmaking parameters according to the standardized model for the hypothetical ski area such as:

- Temperature required to start snowmaking = -5 °C;
- Snowmaking Capacity = 10 cm/day;
- Power cost as percentage of total snowmaking costs = 32%.

Without any doubt, these parameters are approximate and may be applicable to a resort only by taking into a consideration other specifications and capacity of a certain ski resort (Scott, et al. 2006, p. 384.). The former director of the Ontario

Snow Resort Association acknowledged the importance of snow making by saying "if we had to rely on snow from the heavens, the ski industry would be bankrupt" and the realization of snow making mechanism's actuality has been taken place already in 1988 (MacDonald, 1988, cited in Scott, et al. 2006, p. 378). The concept of "skiing fix" any month of the year has been successfully implemented in Dubai. The snow dome is the centrepiece of the Mall of the Emirates especially popular for summer skiing with 1,500 visitor capacity, 22,500 m² covered with snow all year round, 5 different slopes. The entire slope will be covered with at least 1 meter of snow, produced by snow makers that generate real, high-quality snow flakes to the slope and surrounding areas. A perfect combination two opposite types of resorts (beach and ski resorts) has become an example of a smart strategic planning. In addition, the dome can be used as a venue for international winter sport competitions, which is sustainable. There is also an indoor dome located in Braehead in Glasgow, Scotland, which operates 264 days and creates over 1500 tons of snow daily (Skiing, 2014; GRASSO, 2014).

Noteworthy, that the costs of snowmaking in some Austrian ski resorts have been distributed evenly among the ski resorts and the accommodation industry (Scott and McBoyle, 2007). It also shows a successful implementation of another adaptation strategy – collaboration or cooperation.

The analysis of six ski resorts in eastern North America (Scott, et al. 2006) revealed that snowmaking extended the average ski season up to 55-120 days. However, the Okemo ski resort in Vermont has already created the largest reservoir in the region (264 million-litre capacity), allowing the resort to refill water for the spring, summer and winter use. Unfortunately, when water needs to be taken from the natural sources especially at critical times of the year it might influence on fish and other marine species. In order to overcome this problem, The State of Vermont launched a program "February Mean Flow", where water is not permitted to be withdrawn at a low level of mean flow (Scott, 2008).

The interview data in Australia revealed that managers of four ski resorts there had acknowledged that snowmaking was an important strategy. However, it required "the mammoth amount of energy", for instance, putting an extra 10, 000 Australian Dollars on the electricity bill which had been already 300, 000 Australian Dollars was hard for the small ski resorts, which struggle to survive. Therefore, snowmaking is "a double-edged sword" (Morrison and Pickering, 2013, p. 182).

Thus, it is agreed that despite the fact that snow making is the effective strategy, nevertheless, it has implications like high operating costs and large amount of water to be required hence, an increase of energy demand (Scott, 2006; Scott and McBoyle, 2007). Is it sustainable? The justified outcomes will address that question in the section of data analysis and evaluation.

2.8.2 Development of Higher Terrain

Development of higher terrain is recognized to be an effective strategy. Despite the facts that Swiss operators try to minimize a threat caused by climate change just by acting at a minimum level, nonetheless, their concerns are preoccupied with building higher elevations (König and Abegg, 1997; Elsasser and Bürki, 2002; Scott, 2008; Faullant, et al. 2008).

Thirty-six ski resorts in Austria applied for permits to convert their operations into higher elevations in 2002-2003 (Tommasini, 2003). It can be interpreted that even in 2003 ski resorts were concerned about climate impact and thought about adaptation strategies.

2.8.3 Cloud Seeding

Scott (2006), Scott and McBoyle (2007) in their model of strategies mentioned cloud seeding which allows producing extra precipitation. Originally and mainly it serves agricultural purposes, however, some ski resorts in North America and Australia tried to engage this technology to generate additional snowfall. Despite the cloud

seeding program for 23 years (Vail Resorts) and with regard to that expenses (US$134,000 annually), there were still no convincing evidences that the cloud seeding for the ski resorts is an effective strategy. In 2004 Australian Government agreed to invest US$15 million, five years cloud seeding projects for the Snowy Mountains. The objective was to increase snowfall by 10%. It has been decided to follow up the Australian project, which Scott and McBoyle (2007) had mentioned and according to the final report the result was not that convincing: only 7% increase of the snowfall in the targeted area above 1560 m (Manton, 2011). However, even after the disappointing outcome the SnowyHydro project has continued in collaboration with the World Meteorological Organization. An official update states (SNOWYHYDRO, 2014), that the amount of snow has been increasing. It is not clear, nevertheless, what the increase was because the official statistical data had not still been released. In addition, it says that the high-resolution network of weather stations set up in and around Snowy Water catchments measure snow more accurately, but empirical evidences have not been published. Thus, it is still not clear whether ski resorts will benefit from this adaptation strategy.

2.8.4 Co-operation or Collaboration

Co-operation (Bürki, et al. 2003) or another name of a strategy "ski conglomerates" (Scott, 2008, p. 1420) is considered to be an effective strategic decision because it enables small or medium small ski resorts to unite their capital and recourses to send their customers to the places with enough snow coverage and divide profit afterwards. In practice, collaboration was admitted by the Australian ski resorts managers to be a hard task due to the polarized views. It seems unrealistic to satisfy needs of stakeholders and customers. Simultaneously, it became apparent from the field work data in Australia ski resorts managers had confirmed that "a strong industry is more than just one resort" and collaboration took place predominately for the marketing purposes with "certain limitations" (Morrison and Pickering, 2013, p. 184). It could be concluded that the intention to make a ski industry strong is present, but an actual implementation of cooperation (collaboration) plans is still in the embryonic stage.

2.8.5 Sale of Properties

There is a radical adaptation strategy - sale of properties in resorts as the way to diversify incomes. The authors say that more research required evaluating an implementation of the proposed strategy's advantages or disadvantages (Pickering and Barros, 2013). This strategy might be added under the category of 'fatalism' as an adaptation strategy, which includes ''business as usual'' and cancel ski tourism (Bürki et. al, 2003, p.7).

2.8.6 Business as Usual VS Cancelling Ski Tourism

Some of the Australian ski resorts managers did not deny the possibility to close their ski resorts if a development of seasonal products not just for winter would not be effective. There might be a situation in future when adaptation strategies won't increase business viability and the ski resort will become "ghosts towns" (Morrison and Pickering, 2013, p. 182). However, the effectiveness of that needs to be empirically tested and proven, otherwise, it seems to be an easy passive way unless all accounting data, feasibility reports and other documents confirm that this is the only realistic way out. The conducted field work aimed to address this issue as well.

2.8.7 All Year Tourism

Diversification to year-round tourism has been underlined as a primary potential adaptation strategy especially with regard to lower-altitude resorts (König, U. and Abegg, B. 1997; Scott and McBoyle, 2007; Unbehaun, et al, 2008; Pickering, 2011). However, taken into the consideration the low altitude and hence, the lack of snow in some ski resorts calculated the financial returns per person from the potential summer activities. Thus, the investment in new infrastructure (for example, mountain bike trails) was not worth it in terms of the expenses for the increased water license limits in summer and overall running costs (Morrison and Pickering, 2013).

2.8.8 Non-snow Activities

Many ski resorts offer non-snow related activities (Cockerell, 1994; Wickers, 1994; Bicknell and McManus, 2006; Scott, 2008). Indoor ski slopes as a strategy. The first one has been opened in Belgium the "Casablanca Dome" in 1986 and a further rapid development in technology allowed launching more than 50 more indoor ski domes around the world (Thorne, 2006; Scott, 2011; Scott, et al. 2012). Those activities are called in the academic sphere substitutes towards the skiing activities, for example, spas, tubing, pools and so on), consequently, skiers who are willing to replace their major ski activities will spend more on food and beverages and retail (Scott and McBoyle, 2007). However, there are also implications regarding alternative activities, for instance, "piste walkers' during ski touring might damage piste for skiers, risk their life and lives of skiers by crossing their designated areas without obeying regulations of safety. As a result, hazardous situations might increase, like in the case with Austrian ski resorts, where the conducted survey revealed that 17 percent of people experienced hazardous situations in the alpine terrain, 2 percent on the ski slopes during ski touring (Haberfellner and Pröbstl, 2012). It means what can be implemented as an adaptation strategy for ski resorts to gain more non-skiers in order to increase business sustainability might have an opposite effect and lead to a loss of remaining skiers due to the damaged piste or closing a ski resort due to an accident involving "piste walkers". The conducted field work addressed the aforementioned issues and they are displayed and evaluated in the Results and Discussion Chapters accordingly.

2.9 Swiss Ski Resorts: Overview, Challenges

The case of Switzerland frequently attracts a special attention due to its limited size but lots of international arrivals. Over the years Switzerland has built a strong reputation as one of the leading ski resorts destinations with a solid infrastructure, image of being up-market ski resorts, expensive place and high percentage of loyal customers. Challenges became transparent and noticeable due to an overall loss of the revenue caused by diversified reasons. For instance, for the last three years including 2013 the exchange rate between the Swiss Franc, the British Pound and the

Euro became a deterrent factor and limited severely a number of skiers. With 24.8 million skier visits, attendance for the season 2011/12 was the lowest in the past 5 years. It decreased down to 4.8% compared to the previous season (26.0 million skier visits) and 8.7 % under the five-year average. The sources claim positively that still the attendance was higher than during 2006/07 winter with only 24.2 million skier visits.

However, the winter season 2006/07 has been the worst in the history of skiing due to the tremendous snow deficiency as the main reason. However, the comparison of the worst season with, for instance, the winter season in 2011/12 revealed the following - the official statistical data showed only 0.6 million skiers more, which is not a lot taking into an account that there had been enough snow. Excluding the snow as a factor of the revenue decline, the logical question would be why in 2011/12 the number of skiers was relatively small (Vanat, 2014).

In addition, the season 2011/12 was out of the ordinary. It was shorter but not because there were lack of snow, but because the temperature dropped below the average. Thus, according to the mass media announcements the weather was too cold to ski and it had been recommended not to ski (Vanat, 2014). Remarkably, the media misguided customers with the information because minus 15 degrees Celsius seemed to be a suitable weather for skiing in many ski areas. As an unfortunate result, cancellation of ski vacations and for the ski resorts – a loss of revenue. Hence, making a small conclusion here, objectively Swiss ski resorts destinations are in jeopardy and on the edge of the sustainable path hardly balancing to survive.

A predictability study was organized to forecast an impact of a climate change towards ski resorts in the Bernese Oberland region in Switzerland. According to the predicted outcomes, by 2030 the impact will definitely damage the ski industry but not shut it down completely. Profit will decline by 30% and one third of the ski resorts will have to close down but not all of them. An approximate loss will be around 200 million Swiss francs. Nevertheless, it can be overcome by engaging more tourists for summer time (Pozzi, 2011). The last assumption had to be challenged and

investigated closely during the fieldwork whether ski resorts managers in Switzerland are ready to expand their business by investing financial resources to set up all essential facilities and implement innovative strategies for summer season.

Due to all investigated dilemmas, gaps and challenges the fieldwork has been conducted in Switzerland to meet the first aim of the thesis – to determine and analyse the factors as actual and potential barriers for the ski resorts in Switzerland to maintain a sustainable business practice. Potential barriers' analysis is impossible without incorporating a diachronic methodology (which will be covered in the Methodology chapter) by detecting the actual challenges over the time. The offered assumptions and all the mentioned issues will be explicitly demonstrated and analysed in the chapter Findings.

2.9.1 Ski Resorts of Davos: Overview, Challenges

Naumann states:

> Imagine Davos, as a long street, which, 150 years ago, was just a country road leading to a village with no more than 30 houses, surrounded by alpine hills, behind which, as a supreme promise to skiers, genuine Swiss rock formations loomed. Here, in this classic Thomas Mann Magic Mountain landscape, where one could cure his tuberculosis or pass away in all decadence…Glaciers are melting, snow cannons work in January, the snow cover is thin, and at some point in time all these hotels will be standing vacant (Naumann, 2005, p. 150).

There are five winter sport destinations in Davos: Davos Klosters Mountains Parsenn, Pischa, Jakobshorn, Schatzalp and Madrisa. The map below illustrates their locations.

Figure 2-6 Ski Resorts in Davos, Switzerland

Source: http://www.snowell.com/2/en/60/7260-DavosDorf-Switzerland-ski-hire-skirental

Davos "Magic Mountain" offers an access to 5 popular ski areas. All ski resorts are connected to each other and have the following capacities and features:

- 2 large cabin cableways
- 9 cableways
- 3 gondola lifts
- 9 chair lifts
- 27 ski lifts
- 310 km of runs
- 110 runs – prepared and marked
- 29 runs – easy (60 km)
- 47 runs – intermediate (132 km)
- 34 runs – advanced (118 km)

(DAVOS, 2014).

Ski resorts' business in Davos, Switzerland experienced a significant loss of revenue of the local budget brought by tourism, for instance, over the winter season in 2011 in Davos (Switzerland) the loss was 1.2 million Swiss francs, which as Gaudenz Thoma, the head of Graubünden Tourism in Switzerland stated, had been beyond critical (Meier and Wille, 2011). Swiss ski resorts in Davos can be categorized as ski destination facing a declining stage (Beritelli, et al. 2013). That fact in addition to other challenges which will be closely analyzed in the section below allowed selecting ski resorts in Davos over the rivals.

Some literature suggests that any ski resort can be considered to be snow reliable if in 7 out of 10 winters a sufficient snow covering of "at least 30 to 50 cm is available for ski sports at least 100 days between 1 of December and 15 of April" (Bürki, et al. 2003; Bürki et al. 2005, p. 156). Besides, for the winter period Switzerland set two distinctions: days with at least 30 cm of natural snow cover during the peak periods and days with at least 30 cm of natural snow cover during the rest of the season (Gonseth, 2007. The match has been confirmed in Davos-Dorf and Weiisefluhjoch - Davos. The ski resorts with an altitude below 1500 m are sensitive to snow-deficient winters and might not be on the market without adaptation strategies (Surugiu, et al. 2010b). In this regard, Switzerland implemented a logical and reasonable strategy not to invest resources into any resort with an unadequate altitude and difficulties to maintain sustainability due to the climate change (Bullough, 2011).

A political agenda in Switzerland overall encourages local authorities to follow sustainability concepts precisely by making sport activities a learning and an important platform for the sustainable development of society. As a result, ski resorts are the ones who are legally eligible to fulfil this mission and require acting as agents or actors of change (Chappelet, 2010).

Bullough (2011) claims that Swiss ski resorts follow the formula of Japanese ski resorts: if there are too many ski resorts or lots of barriers to overcome, the stronger ones will survive and the weaker centers have to be actively encouraged to close. It could be called "a natural selection for ski resort" and there is no need to look for

adaptation strategies at all. This formula or approach had to be explored and verified in the fieldwork.

A brief description of 5 selected ski resorts of Scotland will be provided below in order to familiarize with the names and principle characteristics which differentiate them from one another with unique selling points and competitive advantages. In addition, unfortunately, there is not so much literature written about Swiss ski resorts individually.

2.9.2 Scottish Ski Resorts: Overview, Challenges

There are five ski resorts in Scotland: Cairngorm, Lecht, Nevis Range, Glencoe and Glenshee. The following Figures display transparently their geographical location, distance from the major places and date of establishment.

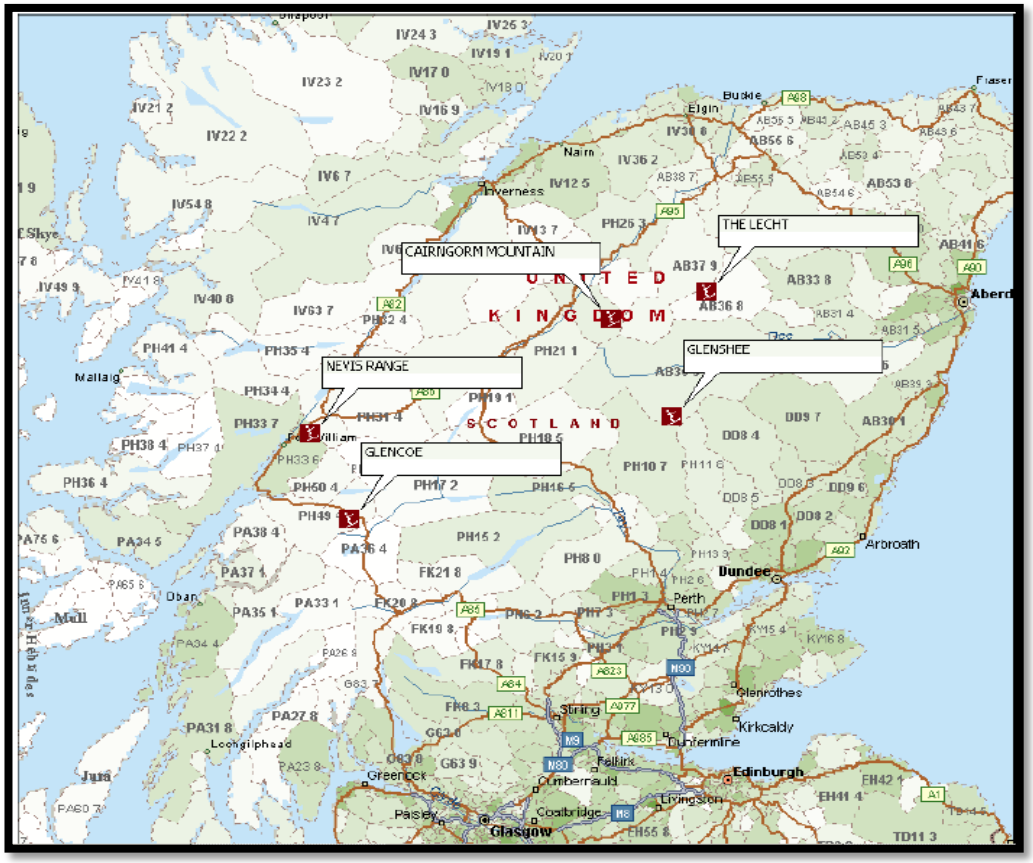


Figure 2-7 Ski Resorts of Scotland

Source: Bullough, 2011, p. 3.

Skiing has quite a short history in Scotland. It has started in 1930 with the first hut being established on the slopes of Ben Lawyers but failed because of poor snow conditions. After that in the late 1950s and early 1960s ski areas were launched at Glencoe, Glenshee, Lecht and Cairngorm. The operation was limited due to a small-scale (for ski clubs purely). However, with the development of car industry, adequate transportation (the A9 trunk road), infrastructure (Glenmore ski road in 1961) and other factors skiing in Scotland has been growing rapidly (Perry, 1971; Davison, 1981; Perry; 2006). Regrettably, in the academic literature Scottish ski resorts are omitted and did not seem to catch a significant attention research wise, for instance, even the published article for the year 2010 mentioned Scotland briefly and rely on the study conducted purely in 1991 (Surugiu, et al. 2010a), but there were at least two recent studies in 2007 and 2008. Ski Scotland and VisitScotland conducted two separate studies: in 2007 an online survey has been organized and in 2008 – 300 face-to-face interviews with skiers at five Scottish ski centres, which the academic literature tends to ignore Bullough (2011). However, an emphasis should be made on the absence of an explorative research among the ski resorts in Scotland themselves and with a focus on their business sustainability, which for this thesis was the aim number one and added an originality to the field of science and valuable contribution to the knowledge.

Table 2-1 Location of Scottish Ski Resorts

Name	Location	Established
Cairngorm	9 miles east of Aviemore	1961
Lecht	4 miles east of Tomintoul	1975
Glencoe	12 miles east of Ballachulish	1956
Nevis Range	4 miles east of Fort William	1989
Glenshee	8 miles south of Braemar	1950

Source: Holden, 2000.

According to the report (Bullough, 2011), ski resorts might struggle to survive financially especially if they faced two or more successfully poor seasons. An average of skier day per annum is 100 -120 and each ski resort between 5 to 30 days due to the wind. Regulations state that chairlifts have to close when the cross wind velocity exceeds 33 m.p.h. and ski tows must cease if the wind force is 62 m.p.h. or more (Perry, 2006). Scottish ski resorts tend to invest the accumulated profit into maintenance and replacement. The policy about environment and planning require a three years period to get an official permission to change, which is a long and complicated process. Each ski resort center is a privately owned business with the exception of Cairngorm Mountain Ltd, which is owned by HIE, which is the land and operating company (Bullough, 2011). The unfortunate implication of being privately owned is leasing land from local estate owners. The dialog between them is attached to the terms and conditions which are strict, for instance, the annual land lease charges are paid on the basis of number of skiing days achieved but not revenue. Other restricted condition might be a limited allowance of summer activities due to a leasing contract; therefore, flexibility and innovativeness strategies seem to be difficult tasks. Besides, a Scottish ski market in most of the cases is a day visitor market with an aging population which impacts dramatically on ski resorts business (Maxwell and MacLean, 2008; Bullough, 2011).

The Scottish ski resorts in general have a light reflection in the academic literature and historically, a more significant focus has been demonstrated towards the Cairngorm ski resort which indicated a biased attitude and unexplainable predominant position or priority over others. The reasons might be various: a past military training, which had been undertaken in the Aviemore (Cairngorm area) and brought authority's close attention with a number of reports and strategies to develop skiing there (Perry, 1971; Davison, 1981; Holden, 2000; Blackstock, et al. 2008; McCrum et al. 2009). In order to overcome the identified lack of attention towards other ski resorts based on the above mentioned, the interviews have been organized in an equal manner with the same research questions, approach and data interpretation.

The tourism industry plays an important role in Scotland: in 1970 there were 5.12 million visitors (4.42 million UK, 0.7 million overseas) and by 2005 tourism accounted for 17.3 million visitors (14.9 million UK tourists, 2.4 million overseas), which statistically demonstrates a rapid increase (Hay, 2007). However, by the year 2010 a decrease by 9% has been detected (VisitScotland, 2010). Many factors might be selected as the ones to have contributed to this unfortunate drop: unreliable snow conditions, less young people pursuing the sport, fewer schools participating, strong competitions from overseas with more cheap offers especially in terms of low airfares offered by budget European companies and last but not least, an uncompetitive Scottish ski product with old equipment and facilities. In addition, snow cover is not reliable in all ski resorts because of the centre base stations' location (at 610 metres. The Scottish ski resorts are situated also above the tree-line, which means there are not natural barriers from the weather especially strong wind (Bullough, 2011). The Figure below illustrates Ten-Year Average (2000-2010).

Table 2-2 Visitor Mix Analysis

VISITOR MIX ANALYSIS			
	Cairngorm and Nevis Range	Glencoe / Glenshee / The Lecht	Total
Ten-Year Average	**91,600**	**107,500**	**199,100**
Day Visitors	55%	86%	72%
Overnight Visitors	45%	14%	28%
Total	**100%**	**100%**	**100%**
Local	30%	24%	26%
Rest of Scotland	47%	71%	60%
Rest of UK	23%	5%	14%
Overseas	1%	0%	0.5%

Source: Tourism Resources Company (Bullough, 2011, p.13).

Bullough (2011) has acknowledged the fact that the demonstrated figures (developed by the consultants) were not accurate and were taken from the informal discussion,

therefore, the data is rather anecdotal than statistically thorough. Any attempts to collect data via the surveys were not valid due to a small sample size or random sample and this issue needed to be resolved in future. However, despite its inaccuracy and with an absence of any reliable data, the demonstrated mix had been used in the Analysis and Discussion Chapters.

Another challenge that requires to be addressed is climate change. In relation to the ski resorts of Scotland this issue is a reality and there is a potential menace for skiing in Scotland to be 'climatically marginal' activity (Howie, 2003). This hypothesis had been offered in 2003 and taking into account the factors, conclusions, analysis from the reviewed literature and conducted field work until now, the assumption became a reality. Thus, skiing in Scotland is indeed, as Howie (2003) stated the climatically marginal activity and what only was the potential menace for skiing became an actual one under the guise of climate change. It could be confirmed by the amount of publications with regard to the links between the climate change and its impact on tourism and ski resorts in particular since 2003 (Becken and Patterson, 2006; Dubois and Ceron, 2006; Scott and McBoyle, 2007; Gössling, 2009; Scott and Becken, S. 2010; Scott, 2011; Weaver, 2011; Scott et al, 2012; Buckley, 2012; Pickering and Barros, 2013; GRASSO, 2014).

For this thesis an analysis of 2010 was significant because of the paradox – with the best snow conditions for over 20 years, the demand peak was still dramatically below the peaks happened in the 1980s and 1990s, Cairngorm and Glenshee engaged more than 60% of the Scottish skier market, but the profile of the skiers at these centres was various. Cairngorm close to Aviemore receives (like Nevis Range) a wider proportion of overnight skiers of short breaks, whereas, Glenshee (similar to Glencoe and Lecht) deals with predominantly day visitors from central Scotland and Aberdeenshire (Bullough, 2011). The researcher conducted the interviews and investigated the reasons of that and offered solutions for improvement in the chapter of Finding and Analysis. The following Graph demonstrates the visitors' patterns in every ski resort over the past 25 years:

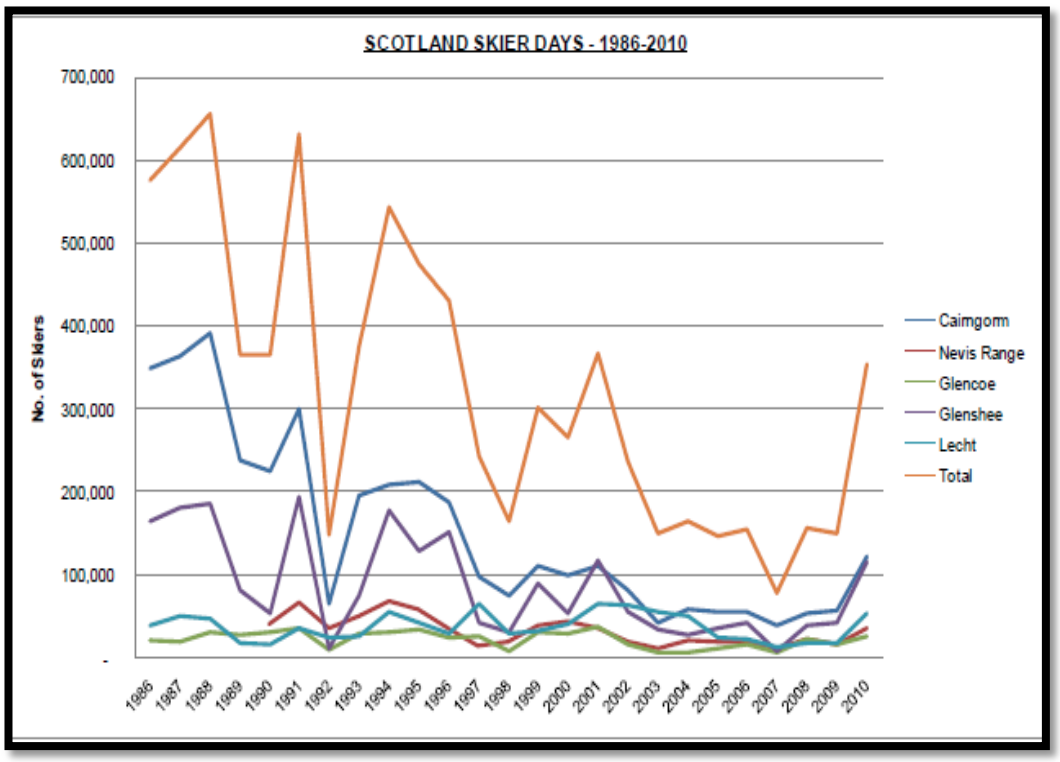


Figure 2-8 Statistical Data of Skier Days

Source: Tourism Resources Company (Bullough, 2011, p.12).

According to the statistical data in the Graph, Glencoe attracts less skiers than others with maximum skiers in 2001 (around 40, -000) and with a noteworthy decline of customers in 1998 (around 10, -000), in 2003 (around 5, -000) and 2007 (around 5, -000); Lecht has also faced the shortages of visitors in 1989 (around 10, -000), 1990 (around 10, -000) and in 2007 (around 8, -000) ; the curve for Glenshee shows that numbers of skiers have been constantly in waves - from the peaks in 1988 (190, 000 skiers), 1991 (195, 000skiers), 1994 (190,000 skiers) to decline in 1990 (60, 000), 1992 (10,000), 1998 (20,000); Nevis Range has been facing similar situations as Glencoe; Cairngorm has suffered a significant decline from 1988 (390, 000) and only 40, 000 in 2007. The total statistics for all five ski resorts transparently display a decline in skiers (660, 000 in 1998 and only 90, 000 in 2007). As it is shown, the season 2007/2008 has been the poorest and unsuccessful for all ski resorts, thus, it had been decided to organize interviews in 2010/11 and ask interviewees about three last winter seasons (2007, 2008, 2009) respectively, for instance, what were the main

reasons of the drop in 2007 and the increase in 2010, implications and solutions, etc. Appendix 1 illustrates the interviews' questions organized according to the themes.

There was an attempt to provide a framework for selection an indicator for sustainable tourism. The field work in the form of group discussion had been conducted among the key stakeholders in two Scottish Parks: the Trossachs National Park and Cairngorms National Park in 2006. The outcomes are worth revealing and taking further to investigate an issue with a closer focus because; the scope of the current thesis includes the area of the last park and evaluates the functioning of Cairngorm ski resort, where the interviews for this thesis had been conducted. The framework consisted of seven discovered implicit determinants prior to a selection of SI. These are: adaptation management, community participation, investigative stance, sectorial comprehensiveness, spatial scale, ST stance and last but not least, temporal scale. One of groups included tourism business. Remarkably, according to the analyzed data community participation, sectorial comprehensiveness and ST stance have been converted to a form of "dominant triangle" (McCrum, et al. 2009). Nevertheless, an open question remained why adaptation management gained such a weak weight? The researcher continued investigating more the Cairngorm ski resort and took the published results further to develop strategies which may be used as narrow implicit determinants on the way of selection sustainability indicators for a particular ski resort. An essential conclusion has been produced in the mentioned research before applying a set of SIs is it worth considering how weak or strong ski resort is and how generic and specific SI should be?

2.10 Ski Resorts: SWOT

In order to summarize and highlight the aforementioned aspects of ski resorts in more precise and transparent form a SWOT analysis has been conducted. The four elements of the SWOT analysis can illustrate strengths, weaknesses, opportunities and threats of an organization, sector or an industry, in this case a ski resort. Thus, positive factors might be reinforced and negative ones – overcome (Stimson et. al, 2002). Without any doubts, the SWOT analysis will cover general aspects of ski

resorts taking into an account that every ski resort is different and not everything might be applicable to a specific ski resort. Thus, the Discussion Chapter will focus in details on the relevance of the SWOT and its elements with regard to the specific ski resorts. The table below illustrates the SWOT analysis.

Table 2-3 SWOT

STRENGTHS	WEAKNESS
World recognized reputation (Perry, 1971; Davison, 1981; Holden, 2000; Blackstock, et al. 2008; McCrum et al. 2009; Vanat, 2014);	**Ski visitors' decline** (Vanat, 2014) **as a result, revenue loss** (Meier and Wille, 2011);
Geographical position and distance for major establishments (Perry, 1971; Davison, 1981; Perry, 2006);	**A remote geographical position and long distance for major establishments** (Perry, 1971; Davison, 1981; Perry, 2006; Bullough, 2011);
An adequate transportation (Perry, 1971; Davison, 1981; Perry, 2006);	**A poor transportation** (Perry, 1971; Davison, 1981; Perry, 2006);
An ideal altitude above 1500 m (Surugiu et. al, 2010; Bullough, 2011);	**An altitude below 1500 m, as a result a direct snow dependency** (Surugiu et. al, 2010; Bullough, 2011);
All year tourism and profitable non-snow related activities during off season (Cockerell, 1994; Wickers, 1994; König, U. and Abegg, B. 1997; Bicknell and McManus, 2006; Unbehaun, et al, 2008; Scott, 2008; Suchet and Raspaud, 2010; Pickering, 2011);	**An ambitious perception of world recognized ski resort, a result, a business stagnation** (Vanat, 2014);
	20% VAT on ski lifts in Scotland (Bullough, 2011);
	Weather implications (Elsasser and Bürki, 2002; Bürki et. al, 2003; Tommasini, 2003; Pozzi, 2011);
Sufficient snow covering (Bürki et. al, 2003; Bürki et. al, 2005);	**Mass media misguidance about snow level** (Vanat, 2014);
Natural snow covering during the peak periods, at least 30 cm (Gonseth, 2007);	**Development of higher-elevation snow ski resorts, as a result – an environmental deterioration and closing an operation due to active public involvement** (Tsuyuzaki, 1994; Hudson, 1996; Bürki, et. al, 2003; Hudson, 2006; Herremans, 2006);
A political encouragement for winter sports (Chappelet, 2010);	**Perceptions of visitors are dominant over ski resorts operations and profitability** (Scott et. al, 2006);
Land and Operating Company Ownership, no leasing is needed (Maxwell and MacLean, 2008; Bullough, 2011);	**A pressure from the Government to fulfil a social role without a suitable support** (Phillips, 2012);
Public funding (Bullough, 2011).	

	Insufficient snow covering (Bürki et. al, 2003; Bürki et. al, 2005; Surugiu et. al, 2010b); **Private ownership, as a result, leasing land** (Maxwell and MacLean, 2008; Bullough, 2011); **Old equipment and facilities** (Bullough, 2011); **Opened facilities, no guests due to a poor marketing** (Bullough, 2011).
OPPORTUNITIES **To gain non-skiers and convert them into loyal customers** (Vanat, 2014); **A reduced VAT on ski lifts in Scotland** (Bullought, 2011); **Summer season activities** (Needham, 2011); **Adaptation strategies:** • **Artificial snow making (snow domes)** • **Development of higher terrain** • **Ski slope design** • **Co-operation** • **Non-snow related activities** • **All-year tourism** • **Cancel ski tourism** (Elsasser and Bürki, 2002; Bürki et. al, 2003; Tommasini, 2003; Bicknell and McManus, 2006; Scott, 2006; Del Matto, 2007; König and Abegg, 1997; Thorne, 2006; Scott and McBoyle, 2007; Scott, 2008; Faullant, et al. 2008; Markandya and Chiabai, 2009; Pozzi, 2011; Pickering and Barros, 2013; Skiing, 2014; GRASSO, 2014).	**THREATS** **Loss of financial stability and internal sustainability due to a lack of innovativeness** (Vanat, 2014); **An exchange rate or strength of one currency over another** (Scott, 2006); **An adequate Governments' policies** (Suchet and Raspaud, 2010); **Less snow** (Cooper et. al, 1998) as a result, **ski seasons' short lengths and snow dependability** (Scott, et. al, 2012); **More snow and cold temperature, as a result incapacity to pursue skiing** (Cooper et. al, 1998); **Less young people pursuing sport** (Bullough, 2011); **Strong competition from overseas** (Bullough, 2011); **Sensitivities of areas and irreversible damage to environment** (Howie, 2003); **Low wages, seasonal unemployment** (Vanat, 2014). **'Piste walkers' implications** (Haberfellner and Proebstl, 2012).

The SWOT analysis had been used as a foundation or a platform for fieldwork. The interview questions (Appendix 1) have been derived from the discovered weaknesses

and threats and assisted to meet the first aim of the thesis; whereas, the issues, revealed in the opportunity section of the SWOT, have been used to address the second aim of the thesis. Therefore, themes for the interviews in Scotland and Switzerland consisted of the most debatable and unresolved issues from the academic literature along with the identified determinants in the forms of adaptation strategies.

2.11 Swiss Ski Resort Profile

A brief description of 5 chosen ski resorts of Switzerland will be provided below to familiarize with the names and principle characteristics which differentiate them from one another with unique selling points and competitive advantages.

2.11.1 Parsenn

Parsenn is considered to be the oldest one and a legendary ski resort in terms of being a birth place of the whole ski industry in Switzerland. In 1895 it has been discovered by four English tourists who lost their way on the Weissfluhjoch and turned to be in Küblis (Davos). Thus, 12-km-long Parsenn run was found with its traditional mountains huts. Operating times annually start approximately from 25.11.2011 and end 15. 04. 2012 depending on weather conditions. The information about ski resorts pass prices will be a vital piece of analysis for the discussing chapter in order to investigate carefully ski resorts strategies in terms of the price variation as a way to either increase or decrease their business sustainability.

One day pass costs:

- CHF 65 - for adults
- CHF 46 - for young people
- CHF 27 - for children

The figures about the costs will be used in the Sub-chapter 5.2.3 (other strategies: price variation). Parsenn has a downhill sledge run from Parsenn to Klosters – 3.5 km (the height is 585 m) with a speedy funicular. Its legendary classic downhill run is 12 km long with 2, 020 meter height difference (DDK, 2011/12).

2.11.2 Jakobshorn

Jakobshorn is a trendsetter with its superb pistes and a place for "freestyle geeks", who go wild in Jatz Park, enjoy Jacuzzi, parties and sun terrace. It is popular for snowboarders. Two consecutive cable cars can take customers to the 2, 590 m summit of the Jakobshorn. Operating times annually start approximately from 18.11.2011 and end 22. 04. 2012 depending on weather conditions. One day pass costs:

- CHF 60 - for adults
- CHF 42 - for young people
- CHF 24 - for children

(DDK, 2011/12).

2.11.3 Schatzlap

Schatzlap is the first "slow and easy" ski resort for gentle skiing and beginners. It is situated four minutes from the center of Davos Platz. Operating times annually start approximately from December 2011 and end April 2012 depending on weather conditions. One day pass costs:

- CHF 30 - for adults
- CHF 20 - for young people
- CHF 10 - for children

Shatzlap has a downhill sledge run from Shatzlap to Davos Platz – 2.8 km (the height is 300 m) (DDK, 2011/12).

2.11.4 Pischa

Pischa ski resort is a children oriented place with a professional childcare system with three main lifts. Operating times annually start approximately from 23.12.2011 and end 25. 03. 2012 depending on weather conditions. One day pass costs:

- CHF 48 - for adults

- CHF 34 - for young people
- CHF 19 - for children

(DDK, 2011/12).

2.11.5 Madrisa

Madrisa ski resort has built a reputation of being a family friendly and is situated around the mountain Klosters (Davos) Dorf. Operating times annually start approximately from 23.12.2011 and end 25. 03. 2012 depending on weather conditions. One day pass costs:

- CHF 51 - for adults
- CHF 36 - for young people
- CHF 25 - for children

Madrisa has a downhill sledge run from Madrisa to Saas – 8.5 km (the height is 850 m) and downhill run with free ride alternatives – 6 km long with 1, 5000 meter height difference (DDK, 2011/12).

2.12 Scottish Ski Resorts Profile

A brief description of 5 chosen ski resorts of Scotland will be provided below to familiarize with the names and principle characteristics which differentiate them from one another with unique selling points and competitive advantages.

2.12.1 Cairngorm

Skiing had a significant impact in the Cairngorms from the 1960s. There was a serious debate about conservation in this area to minimize damage but decreasing the amount of visitors, however, the realization of economic benefits from skiing put the Cairngorms on the map for many visitors. Without a doubt, destination managers acknowledged a sensitivity of the area and irreversible damage to habitat and species, however, an economic profitability and development overruled an environmental protection (Howie, 2003). It is an example of sacrifice or predominant influence of

one QBL of sustainability over another. Hence, the external sustainability has been compromised by unequal treatment of the pillars. Holden (1996, cited in Howie 2003, p. 300) analyzed the opinions of skiers themselves about the environmental impact connected to the building the funicular railways. He discovered that most of the skiers did not connect the outcomes in the form of damages to the environment from their activities but those, who did (aged 25 and above), demonstrated an appreciation and concern for nature. The critical issue here is how real and actual best practices of sensitive management of the fragile environment are nowadays. Therefore, one of the themes for the field work in this research was the effect of raised awareness of the significance of the environment for the future business viability of ski resorts. Thus, in this regard, the challenges from the academic literature have become triggers to fill a gap empirically by having conducted interviews among the chosen ski resort.

Traditionally, Aviemore village was a large year-round resort. It was set to become a Scottish second national park in 2003 (cairngorm.co.uk, 2010). The past challenges were: conservation of the Cairngorms, refusal to designate the area as a world heritage site, seasonal unemployment, low wages in tourism sector as a result, resistance from the local people, lack of wide spread reputation.

In 2001 the funicular railway was opened at Cairngorm Mountain which allows attracting larger sightseer visitor market of more than 100,000 visitors per year. The funicular is 1.8 km ling and operates from 650 metres to 1,097 metres. Cairngorm attracts more overnight visitors and family comparing to other 4 ski resorts (Bullough, 2011; Vanat, 2014). One day pass costs:

- GBP 87.00 - for adult (with instruction)
- GBP 74.00 - for child (with instruction)
- GBP 33.50 - for adult
- GBP 20.00 – for child
- GBP 24.50 – for seniors/student

(VisitScotland, 2010).

2.12.2 Glenshee

Glenshee ski zone was first launched in 1961 by five members of the Dundee ski club under the company Glenshee Chair Lift /Company for skiing. It deals mainly with an east coast Edinburgh-centric market and purely day visitors. This ski resort is strong "weekend warrior". The facilities remain opened all summer but sadly they don't attract enough visitors (Bullough, 2011, p. 50).

One day pass costs:

- GBP 17.00 - beginner (adult)
- GBP 12.00 - beginner (child)
- GBP 24.00 - student
- GBP 29.00 - adult
- GBP 24.50 - child (19)

(VisitScotland, 2010).

2.12.3 Glencoe

Glencoe offers summer activities. It attracts predominantly day visitors as well as the Lecht and Glenshee. It is ideal for the fans of an extreme skiing (Bullough, 2011). Glencoe Mountain is a remarkable one in the sense of its location 1,'- 108 meters above sea level and the highest vertical drop, the longest and steepest runs in Scotland, 19 surface lifts and 3 chairlifts (Vanat, 2014).

One day pass costs:

- GBP 25.00 - midweek day (adult)
- GBP 18.00 - midweek day (child under 16)
- GBP 30.00 - weekend day pass (adult)
- GBP 20.00 - beginners day pass (adult)
- GBP 15.00 - beginner day pass (child under 16)
- GPB 90.00 - family
- GBP 25.00 - student

- GBP 10.00 - chairlift only (adult)
- GBP 5.00 - chairlift only (child under 16)
- GBP 60.00 - 2 hour lesson, hire and lift (adult)
- GBP 50.00 - 2 hour lesson, hire and lift (child)

(VisitScotland, 2010).

2.12.4 Lecht

The Lecht Ski Company was developed in 1977 and started up a ski center in the Grampian Mountains along the A939 between Cockbridge and Tomintoul. It has one crucial disadvantage - a remote location. In addition, lack of other activities creates difficulties to entice customers to stay longer. Its market is mainly people from an Aberdeenshire, beginners and families (Bullough, 2011).

One day pass costs:

- GBP 20.00 - limited area, ½ day (adult)
- GBP 13.00 - limited area, ½ day (secondary age)
- GBP 11.00 - limited area, ½ day (primary age)
- GBP 23.00 - limited area, 1 day (adult)
- GBP 16.00 - limited area, 1 day (secondary age)
- GPB 13.00 - limited area, 1 day (primary age)
- GBP 25.00 - student 1 day
- GBP 29.00 - 1 day (adult)
- GBP 19.00 - 1 day (secondary age)
- GBP 15.00 - 1 day (primary age)
- GBP 24.00 - ½ day (adult)
- GBP 15.00 - ½ day (secondary age)
- GBP 12.00 - ½ day (primary age)
- GBP 55.00 - one day beginner (lift pass, chairlift, hire, 2 hours instruction (adult)

- GBP 50.00 - one day beginner (lift pass, chairlift, hire, 2 hours instruction (secondary age)
- GBP 45.00 - one day beginner (lift pass, chairlift, hire, 2 hours instruction (primary age)

(VisitScotland, 2010).

2.12.5 Nevis Range

Nevis Range as well as Cairngorm accumulated a significant amount of public funding for the development and luckily, engage more customers for overnight stay. As a result, it allowed forming more viable business. Nevis Range is a unique ski resort with the only mountain gondola system in the UK. It also attracts three of four times as many non-skiers as skiers mainly from Glasgow and West Coast-centric (Bullough, 2011).

One day pass costs:

- GBP 20.00 - limited area, 1 day (adult)
- GBP 6.75 - limited area, 1 day (child)
- GBP 13.00 - limited area, 1 day (7-17 years, student)
- GBP 22.00 - ½ day (adult)
- GBP 6.75 - ½ day (child)
- GPB 13.50 - ½ day (7-17 years, student)
- GBP 24.00 - student 1 day
- GBP 30.00 - 1 day (adult)
- GBP 6.75 - 1 day (child)
- GBP 18.50 - 1 day (7-17 years, student)
- GBP 37.00 - private one hour instruction (1-2 people, adults)
- GBP 27.00 - group instruction, two hours (adult)

(VisitScotland, 2010).

2.13 Conclusion

This chapter highlighted and resolved one of the most debatable issues – sustainability, its subjective (internal) and objective (external) interpretation. Therefore, it has been decided based on the personal justified assumptions and points of view of a few scholars to operate with a term business sustainability and viability towards ski resorts' in a long run operation. All elements were revealed and analysed especially TBL of sustainability which had to be expanded and include an additional criteria or legs of sustainability.

Moreover, some debatable issues still needed a further clarification, for instance, determinants of sustainability indicators prior to a selection of model of SIs, which will be only done by the Delphi study. Ways to maintain and increase business sustainability and viability of Scottish and Swiss ski resort along with the comparative analysis were also examined in these chapters. Hence, the next chapters will demonstrate the research approach, research design, research paradigms, methods and tools, the limitations in order to conduct a fieldwork and answer the research questions.

Chapter 3: Methodology and Methods

3.1 Introduction

This chapter describes the methodology used to address the research questions. It begins by outlining the aims and objectives of the research and continues by deciding which methods (qualitative, or quantitative, or a combination of both) were suitable to meet the aims and objectives. The combination of both was proven to be the most beneficial based on a justification of advantages, acknowledgment of limitations, challenges and consideration of alternatives. It also demonstrates both phases of the research in details, the research design and procedures, the ethical considerations, description of the methods, criteria and sample size, validity and reliability. It highlights an importance of a comparative analysis and its value.

Therefore, the aims of the following research were:

- To determine and analyse the factors as actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice.

- To develop a set of sustainability determinants for generic ski resort use.

The following objectives have been set:

- To discover an interconnection of objective and subjective factors of sustainability and its elements;
- To investigate potential impacts of changing environments, that might influence the profitability and sustainability of Switzerland and Scotland as the ski resort destinations;
- To examine and filter the sustainability determinants for generic ski resort use;
- To identify and evaluate systematic sustainability indicators to measure business sustainability of ski resorts.

In order to address the research aims and objectives a suitable methodology had to be adopted. The justification of the employed methods will be demonstrated next.

3.2 Qualitative VS Quantitative Research

The methodology unites the methods and it also involves a strategy for conducting a research (Creswell and Plano Clark, 2011). Methodology is concerned with a set of assumptions about the nature of reality, the role of the researcher, concepts of action and the social actor, a range of methods for dealing with the research problem/s (Silverman, 2006). In order for a piece of research to achieve its aims and objectives suitable tools and techniques have to be adopted (O'Connor, 2001b). These tools may be qualitative or quantitative in nature or a combination of both. Qualitative research is generally associated with data when conclusions are drawn from one or more pieces of evidence (Newman, 2003). Qualitative research targets a particular area of research: what is happening in this area and why. Qualitative research does not produce generalisable results: the methods are exploratory and descriptive in nature and not usually used when theory testing is required unlike the quantitative research (Babbie, 1998). Quantitative tools are normally used to empirically prove or disprove a specific theory, to revise or modify it after it had been tested (Guba and Lincoln, 1985; Bryman, 2006). Qualitative research would seem "to have a monopoly of the ability to study meaning" (Bryman and Bell, 2007, p. 630). Its advocates suppose that through qualitative research a phenomenon of the world can be studied through the eyes of the people who are studied. By contrast, quantitative methods tend to be very impersonal and omit real people with names and unique personalities (Veal, 2006).

In general the qualitative research is apt to collect 'rich' information about comparatively few cases rather than more limited information about each of a large number of cases, which is typical of quantitative research with the exception of when, for example, a research project deals with spectators engaging observation still under the qualitative methodology. However, the difference between quantitative and qualitative research approaches lies in the nature of collected data (numbers versus

words or numerical data as opposed to qualitative data) and how data is being analysed (Veal, 2006; Baggio and Klobas, 2011). There is, nevertheless, a certain ambiguity to claim that the quantitative collective data deals mostly with numbers, whereas, qualitative – with words and interpretation of meanings because qualitative researchers, for instance, occasionally carry out a limited amount of quantification of their data. They use the terms "many", "often", "some", "rarely" or use a contact summary sheet in their interviews, where not only main concepts, themes and issues are recorded but also their frequency of occurrence. The researcher is "injecting greater precision into such estimates of frequency". Thus, qualitative interview data might involve a degree of quantification or so called "quasi-quantification" (Bryman and Bell, 2007, p. 634).

However, more research projects taking into consideration limitations of each approach (the quantitative and qualitative) use both quantitative and qualitative techniques. What one individual methodological approach would fail to achieve, another one would not (Kiessling and Harvey, 2005). Therefore, two approaches complement one another and permit a comprehensive overview of a field using the benefits of both quantitative and qualitative methods. The justification of having chosen the mixed methods for this research will be demonstrated below.

3.3 Mixed Methods – Qualitative and Quantitative

Launching with the qualitative research stance justification, the current research project had all indications of the qualitative research because according to Denscombe (2007, p. 43) "reality is socially constructed and the objective is to understand that social reality and derives from the experiences of the participants" in this case the experiences of resort/destination experts (with some potential overlap) and stakeholders, tour operators and travel agencies, local people and representatives of local business. The intentions of the researcher were to use and apply several case studies about resort management like a case study about Blue Mountain Resort (BMR) in Ontario to investigate the impacts of changing business environment which influenced the profitability and sustainability of similar resorts. Case study

methodologies are based on precise examination of a single example within its life context. In this regards, narratives from individual examples can contribute to the knowledge by providing new ideas and hypothesis for quantitative testing (Flyvbjerg, 2006; Yin, 2009). Nevertheless, the limitations of case study methodology have been acknowledged by the researcher by their limited applicability for broader generalizations. Under the frame of mixed methods the Delphi study's (quantitative stance) outcomes allowed overcoming the occurred limitation and increase reliability and validity of results. The Delphi technique will be treated in subsequent subchapter. Both methodologies were used in tandem at the phase of mixing the data and complemented each other (Bryman and Bell, 2007).

In addition, the outcomes from Blue Mountain Resort case study allowed building connections with the actual challenges of Swiss and Scottish ski resorts and had been beneficial in terms of future strategies and recommendations. The BMR case study is "of interest…in all its particularity and ordinariness" and according to Stake (2000, pp. 437-438) is called the *intrinsic case study* which allowed generalizing the data without going beyond a single case. However, to avoid criticism about the intrinsic studies the researcher acknowledged their limitations and therefore, did not apply it purely to describe a case but to compliment and reinforce the conclusions about Swiss and Scottish ski resorts through the scope of analysis and information gathered during BMR case. The use of case studies is essential to formulate questions for resort managers, hoteliers and stakeholders at the compared resorts to conduct a field work. Ritchie and Lewis emphasize (2005, p. 43) "the term case studies is strongly associated with qualitative research…" and sometimes this term is being used as a synonym for qualitative research. Therefore, applying a case study has become an additional indicator towards the qualitative nature of the research.

Some authors believe that certain research questions lead more towards quantitative approaches, whereas, others that research questions are more suitable for qualitative methods (Onwuegbuzie and Leech, 2005). Over the recent decades, indicators-based projects used primarily quantitative tools and, unfortunately, most of them failed to connect the nature of the human relationships, including "the interweaving of the

objective and the subjective that go into creating" sets of sustainable characteristics within the industry (Scerri, 2010, p. 128). It is acknowledged that quantitative research projects by their scientific nature lean towards focusing on artificial precision and accuracy. Above all the analysis of relationships between variables "creates a static view of social life that is independent of people's lives (Bryman and Bell, 2007, p. 174). With regard to the indicators-based projects under the quantitative methodological stance, a focus on indicators per se tends to "privilege technique over the reflexivity of engaging people" (2010, p. 130) and their expertise about an area, therefore, for the current project it was vital to involve the panel of experts and conduct interviews, thus, the triangulation of both techniques would have assisted to obtain the maximum reliable data by reducing bias.

3.3.1 Triangulation

Triangulation enables using more than one method or source of information in the study of social phenomena, for instance, quantitative research can be used to corroborate qualitative research findings and vice versa (Hammersley, 1996, cited in Bryman and Bell, 2007, p. 645). The term "triangulation" has been employed deeper by Denzin (1970, p. 310) and relates to an approach that applies "multiple observers, theoretical perspectives, sources of data, and methodologies" with an accent towards methods of investigation and sources of data. The engagement of triangulation of methods is an attempt to accurately identify and represent the phenomena under the study (Easterby-Smith, et al. 2008; Marshall and Rossman, 2006). There is a debate in literature in terms of an ambiguity of the term "triangulation" itself. Some challenges arise when a researcher tries to combine quantitative and qualitative methods due to their completely different paradigms, the way to interpret data, tools to use, therefore, it might negatively influence the results belittling the value and effectiveness of both methods (Sale, et al. 2002). Another possible restraint is a presumption that research methods carry epistemological commitments. Both methodological contentions can be overcome by considering the differences of paradigms (hence, distinguished epistemologies: positivism and interpretivism) and treating those paradigms individually. For example, when researchers combine interviews with a questionnaire, they are in fact not really combining quantitative and

qualitative research, since paradigms are incommensurable, therefore, not compatible: the incorporation is purely within a single paradigm and at a superficial level (Bryman and Bell, 2007).

3.3.2 Fixed Mixed Methods Design

In this research it became evident, that reporting only the chosen participants' opinions might not allow generalizing the findings, for instance, policy makers who try to reinforce a concept of sustainability in a particular region, practitioners and others need multiple forms of evidence like quantitative reliable data. Therefore, the researcher preferred **fixed mixed methods design** rather than emergent mixed methods design where the use of quantitative and qualitative methods have been predetermined and planned at the very beginning of the research process. The use of mixed methodologies allowed being more reflexive and critical especially on the stage of results' evaluation, which might be beneficial for much larger audience. Ultimately, the validity of the results will be strengthened (Creswell and Plano Clark, 2011).

The level of interaction between two approaches has been determined as an independent interaction from each other meaning that data was collected and interpreted independently without an overlap. The researcher mixed two approaches on the final stage of conclusions and overall interpretation at the end of the study to maximize objectivity by redefining a set of determinants in the form of adaptation strategies prior to a selection of a model of sustainability indicators (quantitative research methods) and by investigating resort business sustainability using the outcomes from the interviews after a comparative analysis of Scottish and Swiss resorts takes place (qualitative research techniques).

3.4 Defining Research Paradigm

As previously mentioned, the methodology unites the methods and it also involves a strategy for conducting a research (Creswell and Plano Clark, 2011). The strategy is dictated by certain philosophical assumptions which consist of a basic set of beliefs that guide inquires. To describe those assumptions some scholars use the term worldview (Guba and Lincoln, 2005), but Kuhn (1970) used the term paradigm. The most well known work on research paradigms is available in qualitative research Guba and Lincoln (2005) and for quantitative research Phillips and Burbules (2000). Worldviews differentiate in the nature of reality (ontology), how the knowledge of what one knows is being gained (epistemology), the process of research (methodology) and the language (rhetoric) of research (Lincoln and Cuba, 2000, cited in Denzin, N., K. and Lincoln, Y., S. 2000, p. 163; Creswell, 2009c). There are four main worldviews but for this research only three were considered and acknowledged because of their benefits and advantages.

Positivism is often associated with quantitative approaches (Sale, et al. 2002). In this research to achieve the second aim - identification and evaluation of systematic sustainability indicators become an objective. The generalisable data from the quantitative techniques might be applicable in future not only to Swiss and Scottish ski resorts but to other ski resorts as a tool to measure their business sustainability in practice.

Constructivism typically associated with qualitative approaches (Sale, et al. 2002). To obtain the first aim the researcher tried to get the meaning of the phenomena through participants (interviews), their subjective views. However, for mixed methods research **pragmatism** as a worldview is very common. It is oriented towards "what works" in practice (Creswell and Plano Clark, 2011, p. 41). That paradigm has been acknowledged by the researcher as the one which allows looking at data from both quantitative and qualitative approaches hence, in the frame of post positivism and constructivism but the decision has been made towards using every individual paradigm separately to shape the research and contemplate results from a

field work more comprehensively. Supporting that a pragmatic researcher is equipped with a bi-focal lens (both qualitative and quantitative data) and capable to zoom in and zoom out combining macro and micro levels of a research issue (Willems and Raush, 1969).

Howe (1988) argues that only pragmatists try to combine research methods across paradigms but the issue of different ontological assumptions of two paradigms is not being addressed. The researcher had taken into account that both positivism and constructivism could be under pragmatism stance since it was the mixed methods paradigm and as Crotty (1998) notes that all worldviews are just general philosophical orientations and can be combined or used individually.

Hereby, the chosen philosophical stance had predetermined the strategies that the researcher of the current thesis implemented in terms of data collection, its techniques, analysis and validity of conclusions based upon the mixed methods that allowed combining both objective and subjective thinking. Furthermore, it was important to determine clearly two elements of a paradigm: ontology and epistemology (which will be covered below). It enabled the researcher to make a link between a theory and research methods and guide an investigation.

3.4.1 Ontology

There are two main ontological positions: objectivism and constructivism. Objectivism views reality as being separated into variables that can be examined independently from each other. It asserts that "social phenomena and their meanings have an existence that is independent of social actors" (Bryman, 2006, p. 16). Constructivism considers that reality cannot be separated from the individuals' perception since they are connected with each other and mutually dependent (DePoy and Gitlin, 1998). In terms of ontological position, Ritchie and Lewis (2005, p. 22) state that "ontology is concerned with the nature of the social world and what can be known about it". There is "… an external reality which exists independently of people's beliefs or understanding about." The external reality in this research is natural forces like climate change which dictates its own conditions for ski resorts to

adapt, to change a strategic planning, apply different innovative ideas or simply just function as it is.

In terms of data collection methods and analysis, the ontology was more towards realitivism in the actual research where the qualitative techniques have been applied. This overlap of paradigm and method boundaries instead of rigid lines was encouraged by and akin to the mixed methods school of thought (Johnson and Onwuegbuzie, 2004), (Rocco, et al. 2003), thus, as it had been justified before in the current research both methods were used.

3.4.2 Epistemology

Epistemology is concerned with the nature of knowledge and understanding how we know what we know (Bryman, 2006; Bryman and Bell, 2007). In essence, it is the nature of the relationship between the researcher and what is being researched (Phillimore and Goodson, 2004). Epistemologically, under the quantitative paradigm which is based on positivism, the researcher and the investigated objects were independent entities (Sale, et al. 2002). The researcher studied and analyzed a phenomenon (in this case the research themes) without any influence or impact on participants and vice versa. It means, the conducted interviews did not have any influential manner, pressure or attempts to impact on the results. Guba and Lincoln (1994, p. 110) name that "one way mirror". It will reduce bias and the obtained data will be more objective. Whereas, from the qualitative paradigm based on interpretivism, on an epistemological level there is no access to reality independent of people's mind (Smith, 1983). The researcher and the investigated object of the study are interactively connected and the findings are mutually created (Guba and Lincoln, 1994). Caracelli and Greene (1993) argue that in the mixed methods neither type of method is inherently linked to a particular inquiry paradigm or philosophy. From the pragmatic stance, there are no concrete ontological and epistemological positions. Sale (et al. 2002) suggests that there should be developed for a mixed-paradigm with a shift towards positivism colored by a certain degree of interpretivism in favour of compatibility (Howe, 1992). Despite the demonstrated

arguments the researcher was using different paradigms selectively according to the chosen individual stance and research design.

3.4.3 Research Design

Research designs are 'procedures for collecting, analyzing, interpreting, and reporting data in research studies' (Creswell and Plano Clark, 2011, p. 53). Research designs assist to find logic between decisions with regard to the chosen methods and, consequently, interpretations in the end of the research project. The researcher considered using a mixed methods approach from an early stage of the study because it became evident that in order to accomplish the first aim, the chosen qualitative methods will allow conducting an in-depth field work and analyze deeper the outcomes. The second aim will benefit from the quantitative stance. Therefore, the demonstrated justification logically reflected one of the mixed methods design – fixed mixed methods design, which is shown below (Denzin and Lincoln, 2005).

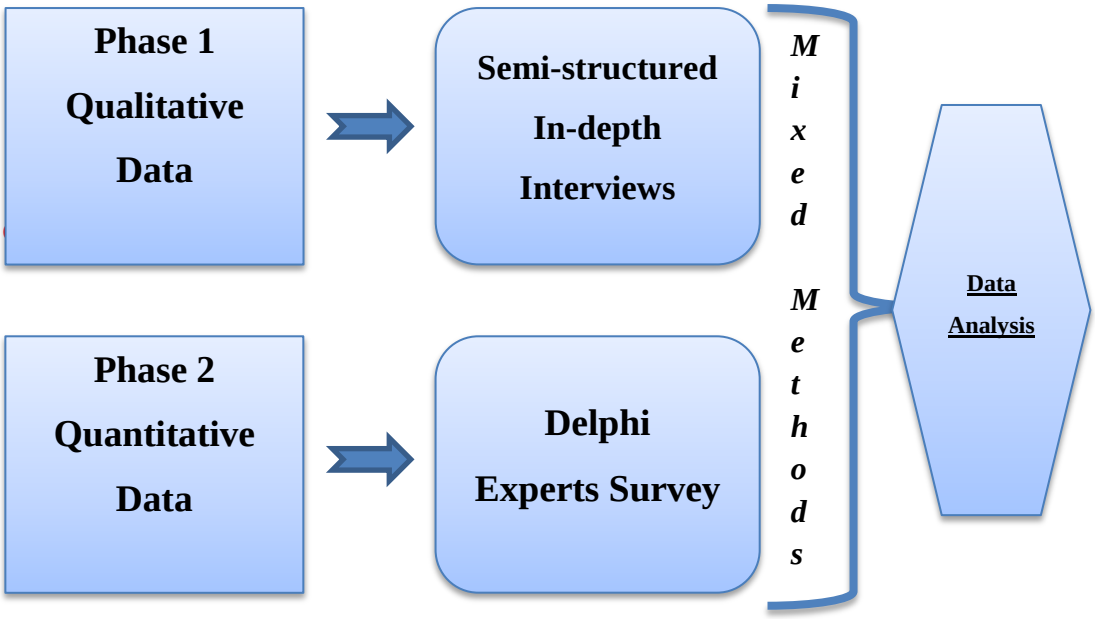


Figure 3-1 Mixed Methods

Source: adapted from Creswell and Plano Clark (2011, p. 191).

The aim of the quantitative and qualitative methods was not to combine the results for a cross validation purpose but for complementary purpose only. For that reason there was no need to divide the research into different stages and the data from the quantitative approach had no link or sequential dependency on the results from the

qualitative techniques or vice versa. Both two phases (qualitative and quantitative) under the fixed mixed methods were conducted within one stage simultaneously (data collection). In addition, the individual methods targeted distinct research questions; consequently, the convergent parallel design considered to be the most effective and reasonable in terms of operating independently with the common tools from both methods and addressing the current research objectives (Morse, 1991; Sale, et al. 2002; Easterby-Smith, et al. 2008). This type of design in the academic literature has various names like simultaneous triangulation (Morse, 1991); parallel study (Tashakkori and Teddlie, 1998); convergence model (Creswell, 1999); and concurrent triangulation (Creswell, et al. 2003). Morse (1991) states that it is a researcher's decision whether to give an equal status to the qualitative and quantitative methods or to give one the pivotal role over another.

Nevertheless, the key element here is the phase: the methods had been applied during the same phase of the research which as it has been identified, will be implemented. The same priority was given to both methods and mixing was initiated only on the phase of results' interpretation from the Delphi Survey and interviews. Accordingly, a triangulation of both methodologies in the end aimed to connect different outcomes from qualitative and quantitative approaches and demonstrate '…the balance between exposure and sensitivity of the resorts on the one hand and of its adaptation capacity on the other' (Surugiu, et al. 2010b, p. 112). That design ideally corresponded with the established research questions and allowed comparing the selected Swiss and Scottish ski resorts incorporating qualitative findings from the interviews with quantitative statistical data from the surveys for corroboration and validation purposes. The quantitative data decreased bias and sustainable business determinants became a measurement and criteria for generic use not only in particular ski resorts.

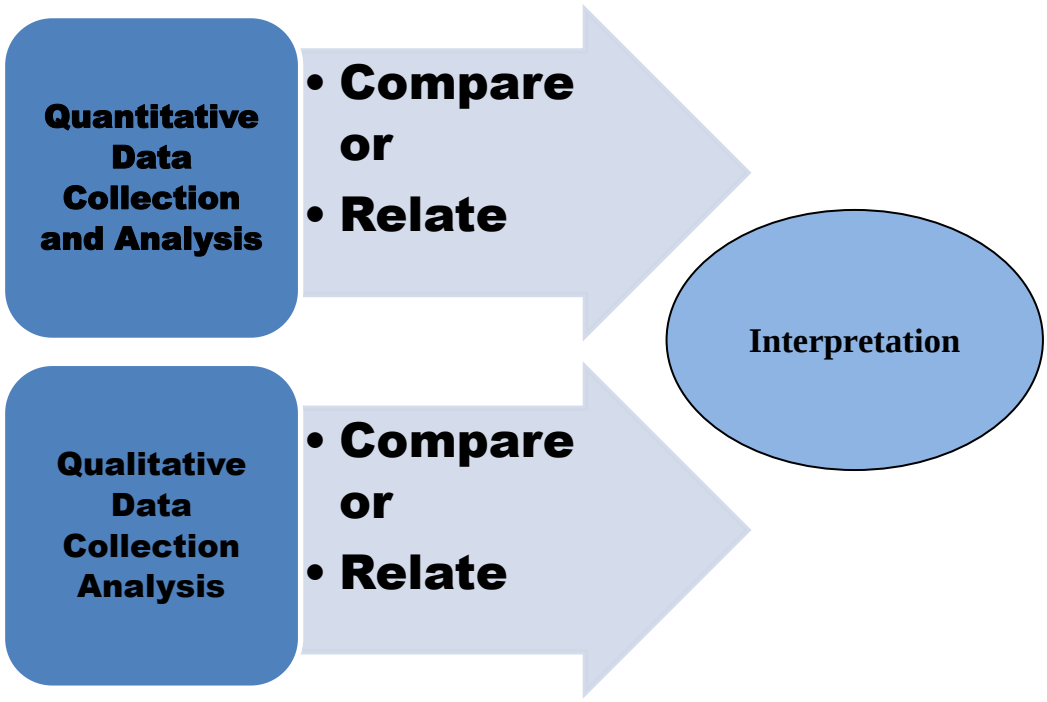


Table 3-1 Creswell's Convergent Parallel Design

Source: adopted from Creswell and Plano Clark (2011, p. 69).

Hence, for this research the convergent design allowed collecting and analyzing two independent quantitative and qualitative data in a single phase and then searching for convergence, divergence, contradictions and relationships between them (Wittink et al. 2006). The job of the researcher was to act as the central figure of the study and to build the findings realizing an equal weighting of both chosen methods using the following notation system.

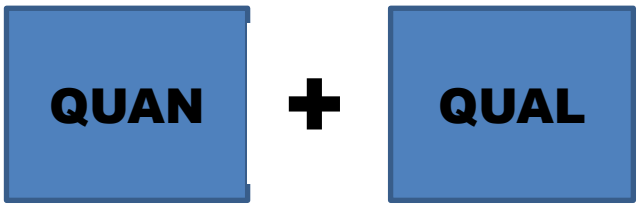


Figure 3-2 QUAN+QUAL=Converge Results

(Creswell and Plano Clark 2011, p. 110)

3.5 Sampling

The purpose of data collection in a mixed study is to generate answers to the research questions (Tashakkori and Teddlie, 1998). Following the convergent design under the frame of mixed methods there were two types of the collected data: quantitative survey-based data (Delphi) and qualitative interview-based data. The following figure states the research questions for the current research.

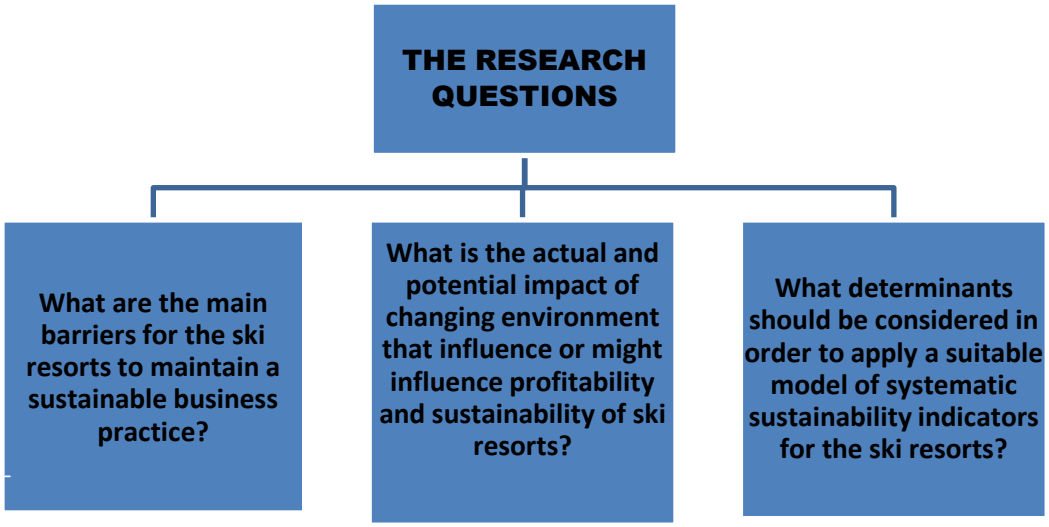


Figure 3-3 The Research Questions

3.6 Phase 1 - Semi-structured interviews

To reach the first aim qualitative semi-structured interviews have been conducted in Switzerland and Scotland. The researcher targeted 5 ski resorts in each country and organised face-to-face interviews among the general managers and operational managers to get a broader perspective from the ones, who were in charge of strategic planning and who experienced the day-to-day operational challenges. The forecast of overall 10 interviews was approximate because at that stage predictability depended on the saturation point to be reached. The face-to-face interaction lasted around 30 minutes. Close-ended questions have been considered; however, they would have limited the responses, had influential manner and compromised the in-depth data collection (Creswell and Plano Clark, 2011).

The interview data has been recorded, transcribed verbatim, arranged according to the broad themes, imported and coded using NVivo, computer-assisted qualitative data analysis software. Appendix 1 contains the interviews' questions. Silverman (2010, p. 389) highlights that one of the advantages of qualitative methodology is working with "naturally occurring data" meaning that during the field work a researcher might ask participants about what actually happened in winter season over the past three years (the facts and events) rather than what they thought happened. The Figure below provides an overview of the qualitative procedures.

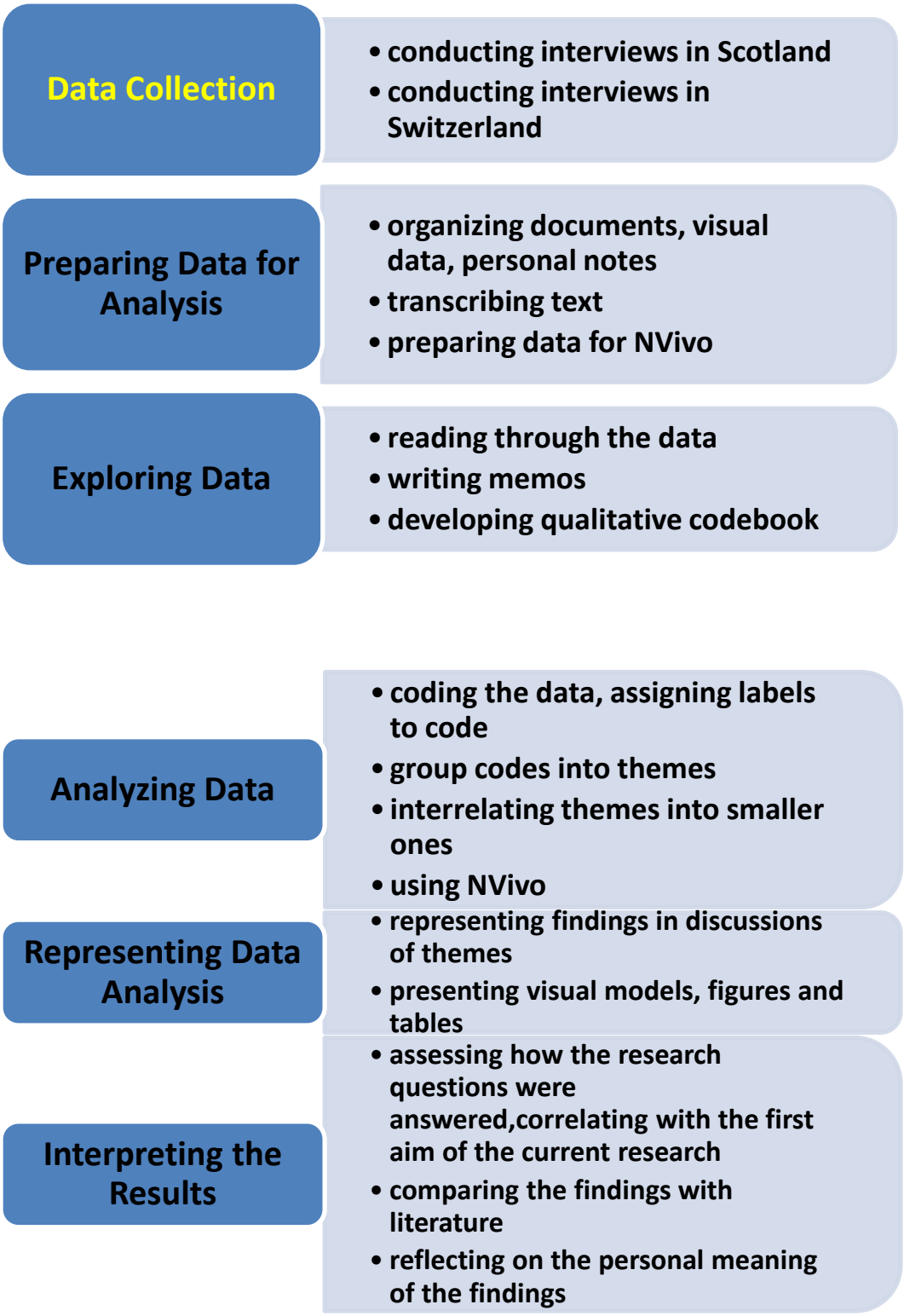


Figure 3-4 The Qualitative Data Procedure

Source: Adapted from Creswell and Plano Clark (2011, p. 205).

3.7 Data Analysis – Thematic Analysis

There are two ways to analyze the open-ended questions: the content analysis and thematic analysis. The content analysis engages a more systematic and mechanical process for the purpose of classifying and quantifying data (Krippendorff, 2012), which was not the aim of the current research, whereas the thematic analysis allows being more flexible and reflective. Its goal is to capture the richness and in-depth nature of qualitative data (Braun and Clarke, 2006). The researcher is supposed to consider how themes should be identified when using thematic analysis: deductively or inductively. In deductive thematic analysis there is a certain structure of predetermined framework. The disadvantage of that analysis is a lack of flexibility, hence results could be bias and limited in terms of their interpretations (Boyatzis, 1998). In order to minimize a bias and increase the validity of the results an inductive thematic analysis has been more preferable over the deductive and initially chosen. The inductive thematic analysis does not have a rigorous structure, theory or framework. The themes are connected to the data because they emerge from it. Thus, this approach is more data-driven, relies on the researcher's analytical preconceptions and psychological interpretation of the data. Despite the fact that this approach is more time consuming, it assists to obtain a comprehensive overview of the topic (Braun and Clarke, 2006). There are 6 phases of the inductive thematic analysis: familiarization with data, generation of initial codes, searching for themes among codes, reviewing themes, defining and naming themes and producing the final report.

Table 3-2 Inductive Thematic Analysis

Phase	**Description of the process**
Familiarization with the data	Read and re-read data in order to become familiar with what the data entails, paying specific attention to patterns that occur and noting down initial ideas/patterns.
Generation of initial codes	Generate the initial codes by identifying where and how patterns occur. This happens through data reduction where the researcher collapses data into labels in order to create categories for more efficient analysis. Data

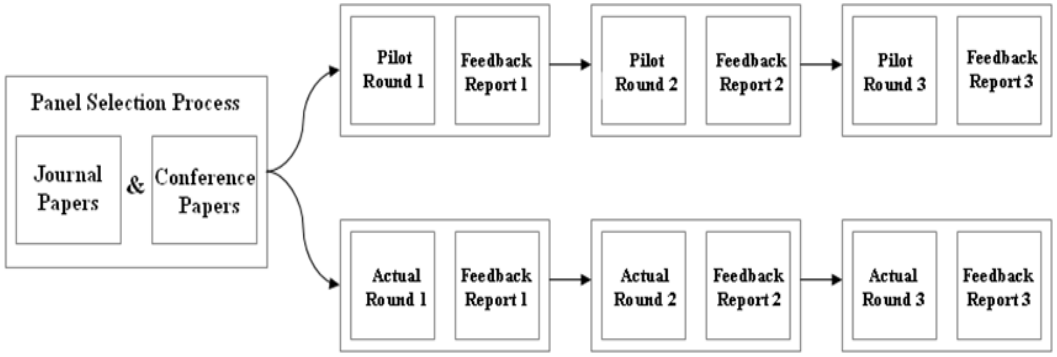
Phase	Description of the process
	compilation is also completed here. This involves the researcher making inferences about what the codes mean.
Searching for themes	Collate codes into themes that accurately depict the data. It is important in developing themes that the researcher describes exactly what the themes mean, what they include and exclude.
Reviewing themes	Check if the themes make sense and account for all the coded extracts and the entire data set. If the analysis seems incomplete, the researcher needs to go back and find what is missing. Generate a thematic "map" of the analysis.
Defining and naming categories	Generate clear definitions and names for each theme. Describe which aspects of data are being captured in each theme, and what is interesting about the themes.
Producing final report	Decide which themes make meaningful contributions to understanding what is going on within the data. Researchers should also conduct verification of the data to check if their description is an accurate representation.

Source: adapted from (Braun and Clarke, 2006, p.94).

3.8 Phase 2 - Delphi

The second aim of this research was to develop a set of determinants prior to a selection of a model of relevant indicators for generic ski resort use. Delphi is suited to achieve that and the justification of the chosen technique will be provided below. The table below summarizes the Delphi Process and assists to get a clear understanding of the major milestones of the whole Delphi technique before explaining in details all rounds.

Table 3-3 The Delphi Process



3.8.1 Description and Justification

As it has been demonstrated in the literature review sections, the complexity of sustainability models, uncertain unclear and broad criteria of indicators and lack of empirically generic approach were those debatable issues that needed to be addressed. In order to address and clarify these issues, it has been decided to engage a panel of carefully selected experts with the knowledge, experience and expertise within the area. A Delphi study is an interactive process (Mehr and Neumann, 1970) that allows a group of individuals functioning as a whole to cope with complex problems (Linstone and Turoff, 2002).

The technique has been first implemented by Norman Dalkey and Olaf Helmerin 1944 to develop a forecast on technology (Fisher, 1978). The original purpose was to organize a group of communication to formulate a consensus regarding ideas, disagreements and point of views about a specific field of a research (Sahin, 2003). Since its commencement, the Delphi studies have been successfully used in over 1000 published projects (de Meyrick, 2002). Martino (1983) claims that the Delphi techniques should only be employed as a last resort in the area with complex issues that have no extensively accepted models, when expert opinion is the most valuable source of information and when empirical evidence is not appropriate. This was exactly the case of that thesis. The chosen technique will benefit a study by

weighting the factors involved in complex issues (Gibson and Miller, 1990), not always generating the solution to a problem, but firming a platform for further investigations (Saizarbitoria, 2006).

The literature suggests organising a number of rounds of intensive questionnaires (Gibson and Miller, 1990). Herewith, for this study it was planned to arrange two rounds (with exploratory and evaluation stages each). However, depending on the gained information a possible extra round had been predicted in case a consensus reached was not adequate (Saizarbitoria, 2006). Every round had been supported by the controlled feedback in the form of reports (Sahin, 2003) sent to all participants as an overview of combined and analysed response from the previous round (Alvesson, 2002). A round might stop at any point if the research questions are answered, consensus is reached, theoretical saturation is successfully archived or sufficient data is obtained. Remarkably, there is no compulsory guidance or template for the Delphi and it cannot be called 'typical' or 'classic' Delphi. The method can be modified according to the research and researchers to meet the needs of the experts (Skulmoski, et al. 2007). Due to the fact that the study was geographically dispersed the Delphi technique proved to be an ideal solution of that problem because it managed to unite the experts from different parts of the world without gathering them in one place. The anonymity had been followed at all stages to avoid the dominant influence of any member over another (Rowe and Wright, 1999). It reduced bias and eliminated contradictions connected with personal interaction.

Traditionally, Delphi is commonly considered to be a quantitative technique (Rowe and Wright, 1999), however, no one forbids to engage any of the qualitative tools which can allow looking at the studying phenomena as an interpretivist under the qualitative methodological stance, for instance, some results form the opened ended questions of Round 1 (the additional comments) have been analyzed through the EVivo according to the themes. Thus, within the Delphi the synergy of both qualitative and quantitative stances can compliment each other and triangulate. The Delphi method is perfectly suitable to "rigorously capture qualitative data" (Skulmoski, et al. p. 9, 2007). Following this pattern, the researcher has created the

first round of the Delphi with a few opened ended questions (qualitative tool) and a set of determinants in the form of a questionnaire (quantitative tool).

The Delphi results have been analysed according to the research paradigms. Due to a complex nature of the Delphi Technique as being a mixture of both qualitative and quantitative research approaches, the outcomes from the first round in the form of qualitative data were intended to be coded using NVivo software and from the quantitative data has been filtered through SPSS.

3.8.2 Criteria and Participants

A selection of participants is the most important and critical component of the Delphi study. It should be based upon objective criteria. It is advisable to form the groups of experts with a minimum of 7 and a maximum of 30 members (Denzin and Lincoln, 1994; MacCarthy and Atthirawong, 2003). Other authors argue and reckon that the size might be from 4 to 171 experts according to the empirical studies (Skulmoski, et al. 2007). However, it is all in the hands of the researcher to suit the needs of the patricians and projects' goals. When the size is too big, there is a possibility that all panellists may not display the appropriate level of expertise to participate comprehensively. Moreover, it had been practically proven by the previous aforementioned studies in the academic literature that a panel size larger than 30 patricians seldom revealed any additional ideas (Czinkota and Ronkainen, 1997).

The major criteria to select the panel were individuals' knowledge of the subject matter based on their publication records (Sahin, 2003). The researcher acknowledged that it had been a subjective process and in order to reach more reliable, valid results and to reduce bias – the researcher targeted the individuals who had delivered two or more presentations on systematic SIs in tourism and hospitality and general measurement of sustainability or published two or more papers in the related journals covering the period from 2005 until 2012. This approach was chosen to discover those people who had profound knowledge about the area (Reid, 1988) in this case: adaptation strategies, determinants of sustainability, SIs and measuring

sustainability thereupon. The results from the quantitative approach have been analysed using SPSS software that allowed contributing individual variables to the solution and the research objectives (Baggio and Klobas, 2011).

3.8.3 Actual Sample Size Justification

According to the Delphi studies from the period of 1973-2005 the sample size of the engaged participants varied paradoxically from only 4 experts to 171 (Lam, et al. 2000, p. 10 cited in Skulmoski, et al. 2007). There is no right or wrong number and also no methodological rigor with regard to the Delphi. As long as the research question has been answered and hence, the consensus was reached, limitations have been openly acknowledged, a justification of a smaller and larger scale is not that significant. Moreover, a small sample of between 10-15 experts may yield sufficient results. There were precedents when out of 45 engaged experts only 3 provided a comprehensive analysis, dedication and triggered a modification of an existed system. It happened due to the lack of appropriate expertise of other 42 members and, obviously, from the personal point of view, due to a critical error of the researchers during the most crucial phase of the Delphi – a selection process. The Delphi process has no dependency on a statistical power. Its significance consists on a group dynamic to reach consensus. Up to date literature recommends the panel from 10-18 experts (Balasubramanian and Agarwal, 2012). To reinforce an occurred position the researcher displayed those Delphi published research, where the sample size was 4-12 participants: Gustafson (et al. 1973) with only 4 experts and 2 rounds, Nolan (1994) with 11 experts and 3 rounds Nambisan (et al. 1999) with 6 participants and 3 rounds, Lam (et al. 2000) with 3 experts and 3 rounds, Shuman (2000) with 12 experts and 3 rounds, Friend (2001) with 8 experts and 3 rounds, Vazquez (2003) with 12 members and 3 rounds, Wynekoop and Walz (2005) with 11 experts and 3 rounds.

The researcher acknowledged a potential contradiction of the common theoretical assumption that quantitative methodology produces general results based on a big scale of a sample size. Therefore, one may argue that 12 Delphi participants are a small sample size for the quantitative stance. Nevertheless, an emphasis has to be

made on the nature of the Delphi technique as being not entirely qualitative or quantitative but a combination, 'hybrid' or 'synthesis' of both methodologies. Some authors call it mixed-method Delphi (Skulmoski, et al. 2006). Building a logical connection here an assumption can be made that common philosophical and methodological rules might not be applied here comprehensively but with certain deviations and exceptions.

3.8.4 Pre-Test and First Round

Prior to the first round of the Delphi a pre-test of the study has been organized. The purpose was to validate the Bristol Online Survey's link, its effectiveness and get an informal feedback and critical assessment before a formal first round with the actual panellists. It is worth highlighting that people involved in the pre-test have not been included into the actual panel of experts as the literature suggested (Sahin, 2003). Wynekoop and Walz, 2005). The same pre-tests have been organized prior to the second and third rounds as well. The academic literature recommends using pre-test to check functioning of surveys. Lee and King (2009) have tested the predetermined determinants of destination competitiveness to decrease the list of the chosen determinants. In contrast, the aim for this research was to narrow down and weight the determinants for sustainability indicators model in the actual first round but not in the pre-test phase.

The analysis of the academic literature, Government reports and official newspapers revealed a range of problematic implications for the ski industries of Switzerland and Scotland, with however, a lack of consensus and weighted opinions. In order to choose a model of SIs which determinants in the form of adaptation strategies should be taken into account? In which extent improving an access to a higher terrain or diversifying a product might influence business sustainability? Under certain circumstances what are the factors to consider about the policy pricing and tax regime? An internal dilemma of a ski resort is being dependable on weather conditions needs to be solved. The debatable solutions are cancellations of ski business or investing in snow fencing to maintain ski resorts viability? For the

purpose of obtaining some clarity, finding a consensus among scholars and reinforcing anecdotal assumptions with academically acceptable definitions the first round of the Delphi has been constructed intentionally in the most suitable manner as opened ended questions about definitions and questionnaire.

The researcher followed a traditional technique for the first round: opened ended questions and a questionnaire (Balasubramanian and Agarwal, 2012). To back up the use of the mentioned tools the evidences from the literature justify the methodological choice: it is very common modification of the same classic Delphi to operate with such a format (Hsu and Sandford, 2007). The first part of the first round contained the most debatable question, as it has been demonstrated earlier, about the external and internal sustainability, SI and model. In order to move forward, a basic understanding and consensus of the investigated phenomena had to be reached.

Hence, based on the previously cited academic sources the following definition was offered to the experts to the perusal and analysis. "A sustainability indicator is a variable which can take a certain number of values (statistical) or states (qualitative) according to the circumstances (temporal) that influence or might influence sustainability" (Dubois, 2005, p. 141). Then the researcher offered a personal interpretation and explanation to the Delphi panelists for them to judge and evaluate. Thus, a model of SIs for any ski resort destination is a tool that can be applied to a long term strategy which measures and weights not only the outer (external) sustainability with all its components (politico- economic , socio-cultural, environmental), but also the inner (internal) sustainability of a ski resort towards its business sustainability and viability (Appendix 6).

The researcher additionally explained two elements of the definitions and asked experts' point of view on this matter. Outer (external) sustainability may operate with a certain set of SIs in the form of a model of SIs that predominantly evaluates an impact (positive or negative) towards the components of sustainability. Inner (internal) sustainability may operate with a set of sustainability indicators for the internal use generated from the actual or potential adaptation strategies in order to

provide a business sustainability and viability for a ski resort. The results from this qualitative approach has been put through NVivo and discussed in the Chapter 4 and Chapter 5 respectively. It means that data analysis involved both qualitative and quantitative techniques according to the mixed nature of the Delphi itself, the amalgam of qualitative and quantitative methods.

Even though the selection of the participants was based upon the objective criteria, an extra evaluation of the Delphi experts' was offered in the first round as well for the purpose of cross validation of objective (the published articles on the following topics) and subjective (their own perception and ranking of the expertise). Thus, the Delphi experts have been offered a scale from unfamiliar, casually acquainted, competent, advanced and expert (Appendix 6) to evaluate their expertise in ST, sustainability indicators and adaptation strategies to increase the validity of this research and decrease the bias.

The second part of the first round offered a set of determinants prior to selection of SIs model in the forms of adaptation strategies for ski resorts and with the description about the SIs. The facilitator clarified that to implement a narrow set of SIs specifically for ski resorts an academic literature suggests formulating at, first, the elements or determinants which might be in the forms of adaptation strategies. Only after the elements are analysed and weighted a ski resort can develop and apply a model of relevant SIs to in order to avoid applying the existed broad models of SIs (like the one in the Appendix 2) with a long list of SIs. The Appendix 6 illustrates a full questionnaire of the first round.

After the first round of the Delphi the researcher analyzed the provided answers, edited and returned in the form of the controlled feedback (the summary of the responses) anonymously to the expects. The facilitator (the researcher) of the Delphi process maintained confidentiality throughout the entire process in order to avoid an influence of the dominant individuals, hence the biased has been minimized, viability and reliability of the results – maximized. The emails have been sent to all participants of the first round following the conventional Classic Delphi design with

a questionnaire for a second round been based on the outcomes from the first round. The purpose of emails with the summary was to allow participants reassessing their initial judgment or maintaining the same point of view for the second round (Balasubramanian and Agarwal, 2012).

3.8.5 Second Round

After a detailed analysis of the First Round of the Delphi Study, the results from the opened ended question related to the definition of SI and model revealed a need to include every single additional criterion, amendments and contradictive comment to the next round in order to filter and weight them with a purpose to reach a consensus in the Second Round (Appendix 9). The responses from the multiple choice questions about determinants, which might be in the forms of adaptation strategies (Appendix 9) before choosing a model of SIs, have been accumulated and analyzed in the scale from 1 to 7 (1 = very unimportant, 2 = unimportant, 3 = slightly important, 4 = neither unimportant nor important, 5 = slightly important, 6 = important or 7 = very important). The elements in the given list in the forms of experts' preferences, which had not reached the fifth merit (slightly important), were eliminated for the Second Round as "the unpopular and irrelevant" according to its filter through the experts panel. In addition, the answers, which had scored 7 (very important), were excluded from the Second Round because the consensus among the Delphi Experts was reached, thus the determinants, which reached 7 (very important), had not been questionable or debatable. Consequently, for the second round a continuous search of consensus was shaped in Experts Survey – Round 2 with the comments about a definition, as a part one, and multiple choice questions, as a part two, with the scales from 5 till 7 because initially the chosen responses have at least gained and already crossed the fifth merit but failed to reach the 7^{th} merit, hence, the debate about the remaining components was still present and had to be resolved in the Second Round. Appendix 7 displays fully the Experts Survey prepared for the Round Two.

3.8.6 Third Round

The aim of the Third Round was to revise and validate the outcomes from the previous one. For that purpose the results from the Second Round have been compiled to the questionnaire with the embedded feedback from all the Delphi Panel experts. The experts were asked to re-rate their answers with regard to the items, which had not yet reached a consensus, and the calculated average score had been in the range from 3.00 to 4.00. These elements have been taken further through the weighting process for the Third Round of the Delphi. The offered re-rating scale was from 1 (no relevance) to 5 (extremely relevant). The items, which reached MEAN (the average score) 4.00 or above, indicated that the consensus had been obtained and hence, were excluded from the Third Round in order to save time and shorten the questionnaire. The average score for each time was calculated based on the outcomes of the second round by having engaged the SPSS.

3.9 Methods to Compare Ski Resorts

Following the Creswell Convergent design (Creswell and Plano Clark, 2011, p. 69) the mixing of methodologies commenced only at the stage of analyzing the findings from both quantitative and qualitative phases, therefore, the researcher had to find, justify and apply a suitable methodology in order to compare considerably different but simultaneously similar ski resort destinations. The challenge was to discover an appropriate methodology for two radically various with a few similarities ski resorts destinations – Switzerland and Scotland. The foundation and justification for that is explained below.

3.9.1 Value of Comparative Approach

The original main purpose of the comparison in tourism was to benefit from other destinations', countries', organizations' experiences in order to potentially solve and handle the occurred practical problems, implications or challenges. Comparative

studies in general are not easy tasks. Such studies usually face many challenges and they are not easy to be conducted due to the selection of variable and issues, which can be accurately compared; geographical diversification; invested resources; language barriers; methodological traps and many other factors to consider (Dieke, 1993; Pearce, 1993). Cross cultural comparison, as Warwick and Osherson state (1973), is an important mechanism and tool because generalizable findings can be produced by exploring various cultural settings. Therefore, the value of comparative studies is quite significant and should not be underestimated. According to Pearce (1993) a choice of two locations, destinations or companies cannot be influenced entirely by their similarities but also by their differences otherwise, future lessons, outcomes and contributions won't have an impact or will be useless to the science. This research has targeted two ski resort destinations: Scotland and Switzerland. The position of the researcher and justification of the choice concurs with Pearce's point of view; hence, both Switzerland and Scotland have been chosen due to their existed similarities, for instance, in the forms of challenges, and differences, in the forms of various approaches to handle the occurred or occurring challenges. The revealed coping mechanisms will benefit the knowledge, increase validity and reliability of the results and become attractive for publishers and future research.

The nature of the comparative research must be distinguished not only by the interrelated analysis and interpretation of phenomena but also by the aim (Pearce, 1993) or reason it is conducted (Masser, 1981). In this research the purposes of the comparison had been the following: to increase a practical value of the field and if it were a possibility to transfer the experiences and results; to stimulate a development of a theory by the comparison of two ski resort destinations. A comparative approach allows "…to go beyond description (what, when, how) towards more fundamental goal (why) of explanation (Hayne and Harrop, 1982, p. 7, cited in Hays, et al. 2012). Therefore, in the section about findings the researcher comprehensively analysed the cause (why) of the factors that influenced business sustainability and viability of Swiss and Scottish ski resorts and made conclusions plus recommendations about future coping mechanisms to avoid or reduce the explored challenges.

By comparing two similar destinations the conclusions might be strengthened by identifying different ways of approaching the same challenge - investigating ski resorts business sustainably and viability. The literature suggests embracing a diachronic and synchronic analysis to compare different phenomena. Diachronic approach incorporates an analysis of something over the period of time and synchronic – current situation (Duval, 2006). Concerning this research three years period has been intentionally chosen to detect challenges of the ski industries in Switzerland and Scotland evaluating the peak winter season with the worst one. The researcher also merged the findings from the interviews and Delphi using a dichotomous approach by dividing each individual outcome into two categories and converging the result of both QUAN and QUAL methods in the final phase (Creswell and Plano Clark, 2011).

3.9.2 Analogue Methodology

The literature suggests that few studies delve into development and implementation of a methodology to compare two contradictive phenomena with some similarities (Ford, et al. 2010). In the legal literature an analogical method is used in the form of that "a case should be treated in a certain way because that is the way a similar case has been treated in Stanford Encyclopaedia of Philosophy (SEP, 2006, p. 20). However, the criteria of that are unclear in terms of to which extent similarities vary and to which extent differences distinguish. Supposing, under the legal reasoning a consideration of applying is given to a judge and under the scientific stance – it might be given to a researcher. Without any doubt, there is a biased situation of interpretation; nevertheless, the validity of the results can be increased by outcomes from a different methodology. Ford (et al. 2010) proposed a special kind of methods related to climate change vulnerability research. Climate change is an attribute of the environmental component of sustainability, as it had been demonstrated in the previous chapters, and this change inevitably will have an impact on social, cultural and economic element as well.

Despite the fact, that the mentioned methodology has been applying primarily in climate research since 1960, it might be implemented to compare ski resorts because analogue methodologies, first of all, two things, states or destinations are known to be alike (over space or time), then they must be alike in other respects; second of all, both target to assist assessing the likelihood and circumstances under which certain outcomes occur, discover external factors and use which is currently known to forecast strategies for future (Gertner, et al. 1995). Reinforcing position about analogue methodology to be applied in tourism, its methods have been successfully applied in economics, for instance, Wall Street crash prediction caused by the attack of the World Trade Centre (Gertner, et al. 1997). Gertner (2003) claims that analogical reasoning is applicable between two specific exemplars or cases (in this research Swiss and Scottish ski destinations), in which what is known about one exemplar can be used to extract new information or make parallels about another one (the same comparison approach has been used for this thesis). Hence, some parallels were identified during the interviews, there are likely to be more parallels at the analysis phase. That was precisely the case here.

The connection towards operating with analogue methodology for Swiss and Scottish ski resorts is being identified: literature suggests if both share similarities in structure (Gentner, 1983) and organisation, or might compliment on another by developing in this case adaptation strategies to overcome issues related to sustainability in general (external) or business sustainability (internal) and viability. It was vital for this research to be able to draw conclusions from the interviews' outcomes to develop new strategies and policies by taking advantage of, for instance, the climatic component of sustainability as the most essential for resorts in Switzerland and Scotland because both destinations are ski resorts. A similar comparison has been done in Canada's Greater Toronto Area (Ford, et al. 2010) investigating and projecting impacts of climate change on the golfing industry which falls under the category of golf course resorts. Carrying on the intent of the researcher to form adaptation strategies for both destinations engaging past and present experiences and responses towards sustainability components' challenges a suitable methodology has been considered, weighted and finally chosen. The described characteristics

correlated coherently with temporal (or historical) analogue (McLeman and Smit, 2005). Since researcher is a pragmatist, that had been established and justified before, it allowed linking and using pragmatic mapping theory for analogue methodology developed by Holyoak (1985) in order to generate new adaptation strategies and set of SIs because that type of mapping is oriented towards reaching goals in analogue by the problem-solving according to its nature (Holyoak and Thagard, 1989; Hummel, et al. 1997).

As it has been demonstrated above, there is no restriction in the academic literature that prohibits using analogical methods in other discipline and does not allow extending its criteria broader towards different context. Based on the demonstrated justifications, the analogy methodology which was mainly typical and common for climate change research can be adapted with modifications and implemented in tourism by transforming it to a different discipline and linking research science about climate implications and its determinants to the tourism applying a tool beneficial for comparing Swiss and Scottish ski resorts. An analogue methodology for this research specifically was modified and made an emphasis on the performances of Scottish and Swiss ski resorts during a period of time when climate conditions were similar to the ones which are common annually with warm winters' implications vs. cold winters' implications (Dawson and Scott, 2010). Data from the conducted interviews in both countries assisted to assess actual and potential implications and create under analogue methodology an estimate predictability of the similar scenarios' development in future. A consideration, however, has been given to an acknowledgement that future circumstances in the forms of different events, catalysts, and triggering factors might not be similar at all and the temporal analogue or "forecasting by analogue" will be impossible (Glantz, 1988). To overcome that qualitative findings were complimented by the quantitative findings (Delphi) and a set of adaptation strategies or determinants weighted by the Delphi experts had been created as a pre phase stage before choosing more specific and narrow set of SIs in order to maintain ski resorts business sustainability and viability. The chosen methodology allowed developing adaptation strategies by reinforcing the strengths and eliminating past implications and overcoming potential weaknesses (under the

framework of temporal analogue) identified during the interviews in both countries, the analysis of which will be covered in the chapter about Findings and Discussion.

3.10 Ethical Considerations

Despite the notion that in business research the ethical considerations have less impact than in health research (Silverman, 2006) they still had to be acknowledged and the main principles should have been followed. For instance, according to Bryman and Bell (2007) certain issues needed to be addressed:

- Possible harm to participants;
- Lack of informed consent;
- Possible invasion of privacy;
- Deception.

There was a minimum possibility of causing harm to participants. However, as it is required, an ethical form has been submitted to the Ethical Committee and an approval to conduct a field work has been successfully granted. Participants were completely aware about the ongoing research (Appendix 10- Information Sheet) and their consent had been obtained in the first case – by providing the ethically approved Consent Form (Appendix 9) face to face before the actual interviews (qualitative approach) and in the second case – by sending it in advance by an email (Delphi, quantitative approach) for the Delphi Experts to express their willingness to take part in the research (Appendix 5 – an Email Invitation to Participate in the Delphi Study). Appendix 4 demonstrates the Research Background sent to all the Delphi participants prior to the Delphi Study.

The researcher did not intend to misuse the gained information or break the confidentiality. In this case, there were no direct effects and confidentiality had been guaranteed especially in terms of possible identification of persons, organizations and places. Anonymity has been assured at every phase of the research (Bailey, 1978).

According to UK legislation data protection act (Data Protection Act, 1998) the results from the field work had to be processed fairly and lawfully, stored properly, taking into consideration the time frame and its usage. In this regards, one possible implication might have been - a potential overlap of two legislative systems since the field work had been conducted not only in UK but also in Switzerland; therefore, a challenge was to identify Swiss regulation about this matter and follow it too (Swiss Federal Act of Data Protection, 1992). However, since the research had been originally attached to UK, the act from 1998 had to be rigorously followed.

3.11 Validity

Validity is an essential criterion in establishing and assessing the quality of the research. In the qualitative research the relevance of validity is argued due to the issue of measurement validity, which has a little bearing for qualitative studies because of their nature. Measurement validity aims to determine whether the method used is an accurate measure of what it is intended to be measured, which again contradicts with the nature of the qualitative research (Baker, et el. 1994; Bryman and Bell, 2007). Validity has been also rejected because of "its overuse, its meaninglessness" and, therefore, dislikes by the qualitative researchers (Creswell and Plano Clark, 2011, p. 238). Validity is the extent to which the data obtained by the researcher truly reflects the studied phenomena. It is commonly known that tourism research has got implications because an empirical research deals with people, their attitudes and behaviour (Veal, 2006).

There are different types of validity: validity in the qualitative methodology and validity in the quantitative methodology. Under the qualitative methodological strand there are two types of validity: an internal validity and an external validity. The internal validity means whether there is a good connection between researcher's observations and the theoretical ideas. The external validity identifies the rate to which findings can be generalized across the social settings (Bryman and Bell, 2007). The researcher was determined to develop a discussion and connect the academic literature with the findings from the interviews based on the subjective

compression; hence, the internal validity was used. Despite the definition of the validity, the whole process of validation should involve "continual checks of the creditability, plausibility and trustworthiness of the actual strategies used for collecting, coding, analysing and presenting the data (Kvale, 1989, p. 78). Bryman and Bell (2007) in addition with the others add three more components to the process of validation: transferability (which parallels the external validity), conformability (which parallels objectivity) and dependability (which parallels reliability).

Moreover, under the quantitative methodological strand Kumar (2005, p. 167) distinguishes: *face and content validity, concurrent and predictive validity, construct validity*. However, Bryman and Bell (2007) differentiate and mention 4 types of validity: *face validity, concurrent validity, predictive validity* and *construct validity.* There are not any rigorous rules in terms of the categorization. The critical point is to be able to comprehend each type and apply it in the quantitative research.

Face validity can be set by asking people, if the measure seems to be getting at the concept, which is the focus of the research. It is rather an intuitive process because people might be asked to evaluate their own expertise, knowledge of the research area and act like judges to themselves. For the Delphi technique the face validity did not seem to be suitable due to the objective criteria used for creation the Experts Panel (Subchapter 3.8.2). The subjectivity of the face validity does not allow drawing definite conclusions (Kumar, 2005).

Concurrent validity deals with the scale or criterion that the researcher establishes, for instance, a new measure of job satisfaction – absenteeism. Some people are absent because they might be sick, other people have different reasons. To set the concurrent validity of a measure of job satisfaction, the goal is to find out "if people who are satisfied with their jobs are less likely than those who are not satisfied to be *absent* from work. If no proves of an absence in a tracking system were found, therefore, it won't be possible to differentiate the reasons behind being absent. In this case a doubt could be raised in terms of the measurement and its correlation with the

job satisfaction criterion. The concurrent criterion is usually a contemporary one (Bryman and Bell, 2007, p. 165).

Predictive Validity operates with a future criterion. Using the same example to clarify the validity, the researcher has to employ a future level of absenteeism as the criterion. The reason why Kumar (2005) groups the concurrent validity with the predictive validity could be the similarity between them – the only difference is the scale of time, present or future. The correlation coefficient is used sometimes in the case with the predictive validity in order to test the predicted outcomes with the criterion (Bryman and Bell, 2007). For this research it has been decided to use the predictive validity in the Delphi technique by calculating the correlation coefficient and using SPSS imported data (Discussion Chapter).

Construct validity is a complex technique, based upon statistical procedures. With the same example of the job satisfaction a few variables are set measured and compared towards the total level of satisfaction (Kumar, 2005).

In order to maintain and increase the validity of the results from the quantitative approach, the Delphi methodology has followed four essential attributes. Rowe and Wright (1999) claim that only those studies, which contain four major characteristics of the Delphi can be valid and reliable. Hence, through all Delphi stages the anonymity was strictly adhered; a constant interaction, which allowed participants based on their views in different rounds and views of others reshaping or changing their own perceptions, was followed; the controlled feedback was provided and last, but not least, statistical aggregation of the group's collaborative effort had a significant impact to reduce a bias and increase an objective analysis.

Validity for the mixed methods research deals with the strategies to overcome potential issues regarding data collection, data analysis and interpretation, that might compromise the merging of the qualitative and quantitative strands and; hence, conclusions. One of the potential validity threats has been acknowledged from the beginning, such as collecting two types of data that do not address the same topics

(Creswell and Plano Clark, 2011). In this research specifically the topics of the Interviews and Delphi were different because they aimed to meet two distinguished research objectives, however, under the common broad theme (investigating ski resorts business sustainability) in both qualitative and qualitative data collections. The appeared threat was solved by addressing the same questions in both methodologies like adaptation strategies, business sustainability. Nevertheless, maintaining the consistency of data collection by using the same tools, same questions to gain stability and accuracy demonstrated a stronger reliability of results. Reliability as a concept and research instrument will be addressed below.

3.12 Reliability

Reliability is the extent to which findings from the conducted "research would be the same if the research were to be repeated" some day later, with a different sample size and a degree of generalizability of results (Veal, 2006, p. 41). Reliability as a concept means if a research tool is consistent and stable, the research tool is, therefore, predictable and accurate and thus, could be called reliable (Kumar, 2005). For the quantitative researchers reliability means that scores obtained from participants are consistent and stable over time. The reliability of scores is checked through the statistical procedures of internal consistency (Creswell and Plano Clark, 2011). For the Delphi technique as the quantitative tool the Cronbach's alpha test has been incorporated as the instrument to test-retest results, hence, to assess their reliability. The Cronbach's alpha is a test of internal reliability, which calculates the average of all possible split-half reliability coefficients. The data of an acceptable level of internal reliability, perfect level of internal reliability and no internal reliability will be displayed in the Subchapter (4.4.4) dedicated to the Delphi (Bryman and Bell, 2007).

In the qualitative research to reliability has been paying less attention than to validity, nevertheless, reliability relates mainly to the reliability of multiple coders in order to reach consensus on codes for passages in text. For this research it is decided to engage at least two individuals to determine, whether they arrive at the same code

and themes or different ones. NVivo assisted in determining the rates for the percentage of similar codes, so called reliability statistics (*kappas*). The whole process of comparing coding among several coders is called *intercoder agreement* in qualitative research. Subchapter (4.2.3) displays the kappas and disconfirming evidences, the information that reflects an opinion that is contrary to the one indicated by the established evidence, in this case by the researcher while the original coding (Creswell and Plano Clark, 2011).

Due to the fact that the researcher during the field work in Switzerland and Scotland asked the interviewees questions about potential situations, challenges, which had not been occurred yet, the reliability of outcomes from those questions was not considerably high. However, the researcher predicted those kinds of implications in advance, thus, the questions for the participants have been constructed in the manner to connect the past situation and possible future ones based upon the empirical experiences the participant have faced. Therefore, the findings which demonstrated similar responses, measures between the actual and potential situations may increase reliability and validity in terms of possible variations of actions (Dawson, et al. 2011). While conducting interviews some of the questions were formulated towards future potential behaviours, which mean that the respondents replied to hypothetically created challenges during a future timeframe. Therefore, by setting future conditions, which did not take place yet or might not even occur in real life, their replies could not be interpreted with a little less degree of reliability. These kinds of limitations and challenges will be acknowledged and discussed below.

3.13 Limitations and Challenges for Both Phases

The Delphi technique has limitations and the researcher was aware of its potential subjectivity and possible bias in terms of dominance of one expert's opinion over another. In this case a bias is minimised by the fact that confidentiality and anonymity in order to avoid an influence of a dominant member of the panel (Balasubramanian and Agarwal, 2012). In addition, the regulatory bias (Curran and Blackburn 2001) of this research method could be reduced by the outcomes from

quantitative methodology and qualitative approach in collaboration since this research applied mixed methods.

The challenging weather conditions in Scotland created a few complications for the field work to be pursued: due to the lack of snow some of the ski resorts struggled to open and considering that the geographical locations of some of them is diverse, and access to the roads by car was also dangerous. Overall, it had an impact on getting a hold of people who are essential to the ski operation but were away when it had been shut. Hence, the additional trips had to be organized to interview two ski resort managers. For that purpose extra financial means and time was used.

Whereas, in Switzerland a picture looked completely different: the snow was constantly benefiting the ski industry and the targeted stakeholders have been interviewed, however, with a notable bias from their perspectives because the winter season was predominantly successful for them and negative opinions where left out due to overwhelmed happy and content emotions. In this regards, in order to get a more comprehensive opinion, the researcher brought back the challenges they faced and the strategies they applied in Davos during the poorest winter season of 2006/2007.

Another considerable limitation had been that the findings from the interviews were very often abstract and, as Johnson and Onwuegbuzie state (2004, p. 19) "general for direct application to specific local situations". Thus, the findings could not have been applicable to the similar ski resorts which were not included in this study. The validity of the research could be increased by applying the outcomes from the quantitative approach that would allow generalising the findings to non-participant ski resorts.

The comparative methodological approach implies from its nature and a few challenges to overcome: an identification of the basic patterns and common merits to both ski resort destinations' comparison. The researcher acknowledged it and provided a detailed discussion in the chapter about findings.

While conducting interviews some of the questions were formulated towards future potential behaviours, which mean that the respondents replied to hypothetically created challenges during a future timeframe. Therefore, by setting future conditions, which did not take place yet or might not even occur in real life, their replies could not be interpreted with a high degree of reliability but, nevertheless, were relevant and beneficial for the research.

A notion of geographical limitation should have been considered because the comparison analysis would have been carried out in Scotland and Switzerland. This limitation, nevertheless, will also provide an opportunity to conduct similar studies in other locations. To overcome that implication the Delphi technique has been implemented with engaging experts from different countries despite their location. The researcher also took into account large blocks of time the Delphi technique required with laborious and consuming hours of work as the facilitator. Traditionally, as with other methods, Delphi can produce biased opinions from the experts' side as well from the researcher's subjective interpretations. However, this bias was overcome by filtering all data in the SPSS software and identifying a standard deviation, inter-quartile range, frequency counts and percentages. Potential of moulding opinions is another weakness of the Delphi which is difficult to cope with but had to be acknowledged. In this case it is all in the hands of the facilitator to provide a proper feedback (summary) as it had been done for this Delphi study. Moreover, an assumption about different levels of experts' expertise was by all means overcome by the objective criteria of the selection of the panellists, which was comprehensively described and evaluated above (Hsu and Sandford, 2007; Lee and King, 2009; Balasubramanian and Agarwal, 2012).

3.14 Conclusion

This chapter has identified the methods of the research suitable for this thesis, justification of the employed quantitative and qualitative methodologies to meet the research aims and objectives. The detailed overview was provided about Phase 1 (the

qualitative methodology) and Phase 2 (the quantitative methodology) of the research. Limitations and challenges have been revealed and acknowledged. The use of the mixed methods allowed increasing validity and reliability of the research. In addition, it demonstrated a reasoning of using a comparative analysis in terms of its value and contribution to the science. The following chapters will present the execution of the methodology, the results and their analysis in the form of discussion from the interviews and Delphi study.

Chapter 4: Findings

4.1 Findings from Interviews

The aim of the interviews in Scotland and Switzerland was to investigate actual and potential barriers of ski resorts to maintain sustainable business practices and explore a use of adaptation strategies to reinforce ski resorts business sustainability.

4.2 Introduction

This section presents the findings from 9 interviews conducted in Switzerland (5 interviews) and Scotland (4 interviews). Unfortunately, despite two attempts to collect a raw data from a representative of the Nevis Range ski resort of Scotland, collaboration did not take place. The researcher sent several emails trying to arrange a face-to-face interview and even drove all the way to the Nevis Range, where, sadly, was explained that the manager was too busy to be involved in such a research project. The final attempt was pursued and the marketing manager has been contacted to arrange an interview and after a long correspondence only Nevis Range report has been provided by email. Hence, the data from the Nevis Range ski resort is acknowledged to have a limitation and treated as the secondary data only in the form of the provided report. The transcriptions of the conducted interviews were labelled D1 to D4 for the Scottish ski resorts and Z5 to Z9 for the Swiss ski resorts in random order. The distinction in labelling will provide clarity during the phase of comparing Swiss and Scottish ski resorts. Results are displayed according to the themes: respondents' view on sustainability of the ski resorts, respondents' view on barriers of sustainability and respondents' view on adaptation strategies. The themes have been emerged from the analysis of data.

4.2.1 Respondents' View on Sustainability

The general opinion from all the interviewees was the following: all of them have definitely heard the term 'sustainability' before, except for one participant. D2 replied that this was the term she had known nothing about or very little. Thus, they

were aware of its existence, however, the understanding was different and the interpretation was sometimes incomplete or too abstract.

> *Sustainability? Yeah…for Scottish theme is…yeah…well… having enough trade to keep going. I think there'll always be a demand in Scotland for skiing and as long as we can have enough snow and enough good years…we will always have bad years…but as long as we have enough good years to lay out the bad years, we will be sustainable (D1).*

Moreover, some participants after a long pause (Z2, Z6), which indicated their uncertainty about the term asked to explain, what the interviewer had meant by the term sustainability. (D2, D3, Z6, Z7, Z9). A simple explanation was provided in order not to influence the interviewees' responses and after that the reply was the following:

> *what? What do you mean?... yeah….well….we organise competitions, we are always, we are always trying to think of things so that we need to make it that way so we are not relying on a ski season because we might not know, what it is going to happen (D3).*

D1, D3, did not comprehend the key components of the term sustainability or recognized only one of the pillars of sustainability (the environmental pillar). In addition D4 has actually linked the concept of sustainability with a social corporate responsibility without determining and developing further the concept itself:

> *I guess, it means we are not destroying what is around us. There is a responsibility on the company and this is, I think, the key thing! The companies could go ahead and say: 'ok, we don't care and we do not really impact on the snow', but there is a responsibility to take care of the air especially if the resort is close to another site. The way we operate has an impact (D4).*

In the end of that interview D4 made another statement, where he has actually separated the term sustainability and business sustainability. Sustainability in a broad meaning:

> *is such a massive concept….eh….as the ski resort we are trying to operate based on green principles and this is all that strike me like preserving the environment (working with rangers), disposing the garbage and so on.*

Business sustainability has been clarified as:

> *But when you talk about sustainability in terms of our operation, it does not come to my mind …well…We have got a duty and expectations from and for the locals to preserve the mountain. Plus, there is a history involved, it is 50 years of skiing now (D4).*

Z9, however, did not attempt to define the term itself and started to explain the aspects of sustainability, which in fact, had been just mentioned rather than clarified. Unfortunately, it revealed a poor understanding of the concept from the beginning of the interview.

> *Well…sustainability is a very fancy word nowadays (smiled). I think sustainability means all aspects in general should be in harmony. I mean the financial aspect, social and environmental (Z9).*

Straight after the expressed statement Z9 contracted herself by adding the following sentence, which demonstrated her personal point of view in terms of an unequal treatment of the pillars of sustainability.

> *Yes, I think they are all equal. However, some of my colleagues might judge me, but I suppose that the environmental aspect should be number one.*

Most of the Swiss ski resorts (Z5, Z6, Z7 and Z8) respondents tend to interpret the term in a very different manner with regard to Davos as a destination and its historical plus traditional background.

> *well…I mean sustainability for Davos has hundred and fifty years of tradition and personally, I think, tradition is very much connected to sustainability. If you have a heritage to be, you have to take care of it, you have to be sustainable otherwise, you will loose your traditions, or image, or your quality. And Davos is a former place, where people came to cure tuberculosis and it was the beginning of Davos in the 19th century. In 1865 it started, so it is hundred and fifty years ago. So people came up here to cure tuberculosis and tuberculosis at that time was the question of survival or death. So from the beginning Davos was standing for getting people help, giving people the chance to survive and that is a very important heritage. Sure, in the meantime, it has switched when the penicillin was discovered and the whole cure business was completely collapsed. That was the point when Davos switched to tourism, on one side (winter and summer tourism) and to the congress business, on another side. Well…holidays are the most beautiful days and weeks in everybody's life (Z5).*

It is also worth remarking that before providing an understanding and inner analysis of the term, the interviewer had to explain to Z5 a few times about the definition and all its components. The respondent kept asking to specify an exact wording of the question and maintained a series of long pauses in between. Thus, the primary data in this specific case was obtained through a subjective perception of the researcher expressed by the repetitive clarification of the question.

Another respondent named sustainability to be the key factor of customers' attraction for recreation and holidays. Reinforcing a direct connection of the term sustainability and tradition Z8 (Swiss ski resort) expressed:

Our ski resort is the ski resort with a huge tradition and goes now a completely different way and is focused on a slow mountain, which means very traditional, sustainable. It is a very interesting marketing position (Z8).

The identical position has been expressed by D4 (Scottish ski resort) during the clarification about sustainability in general, business sustainably and in relation to traditions:

…there is a history involved, it is 50 years of skiing now (D4).

To demonstrate that traditions play a vital role and have a direct connection with sustainability she enthusiastically reinforced her statement by sharing:

We did celebrate 50 years' date on the 23d of December (our official opening) with the first person, who was sitting on the first chair lift 50 years ago, came back and we have a picture of him back then and now (D4).

A special emphasis has been made on the importance of local people (as the social pillar of sustainability) and an organic connection between people and skiing:

the locals all know each other. It is such an organic thing. Everybody could remember it. There is a special connection here – organic connection between people and skiing (D4).

Z5, Z6 and Z7 emphasized strongly on the sustainability and the price. They agreed on keeping the price no matter what external or internal conditions might dictate in order not to destroy an image of Swiss high quality, which offers a great ski product for very expensive price. The extra values might be added on the top but reducing the price is never acceptable.

The prices are very important factors and a lot of winter destinations also…they reduce the price, the price, the price, the price. But if you reduce

the price, if you make everything cheap, you will loose sustainability because the concept of "the cheapest" is not the concept of sustainability. Switzerland is a high priced country. As I said before…as long as…even if the price is high, as long as the quality is high and the value. If there is a very good quality, there will be people who pay the price because they estimate the quality. Switzerland is a small country and we never are focused on masses and people, who look for mass tourism. Switzerland is maybe a different place. It is a small country, it is an expensive country. It is by the definition of tradition stands for high values and high values- high price and sustainability has a price too (Z5).

Thus, Swiss ski resorts are not oriented towards the masses and traditions for them equal sustainability for Davos ski resorts. In addition, "the concept of the cheapest" is not the concept of the sustainability for Swiss ski resorts (Z5, Z6, Z7, Z8) with one deviated opinion expressed by Z9 with a possibility to reduce a price if situation becomes very challenging.

The figure below (4.1) provides a brief summary of the main interpretations of the concept sustainability from the field work and indicates a clear separation of the term internal business sustainability from the external sustainability.

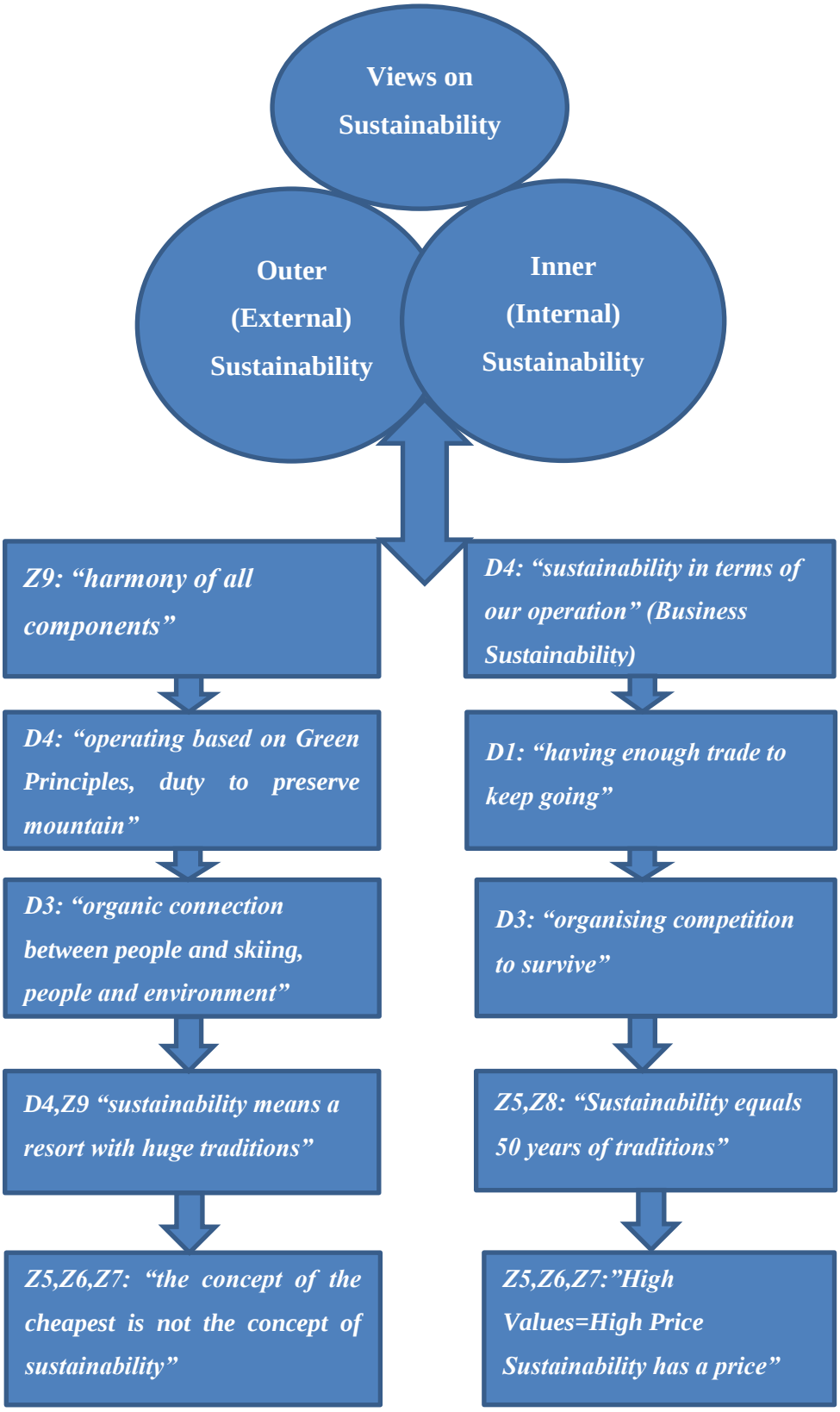


Figure 4-1 Results on Sustainability

Figure 4.1 demonstrated that, for instance, when a manager of a ski resort emphasised on "operation" or "having enough trade" (s)he had implied the internal business sustainability and when on "green principles" or "organic connection" (as a social element of TBL), they had implied the external sustainability.

In order to maintain sustainability and reinforce ski resorts business sustainability it was essential to investigate during the field work what the barriers had been.

4.2.2 Respondents' View on Barriers

The interviewees were asked about the barriers of sustainability in general or barriers of business sustainability (viability), which had an impact on profitability of the ski resorts. Everyone (D1, D2, D3, D4 and Z5, Z6, Z7, Z8, Z9) confirmed seasonality as the barrier of sustainability. With regard to seasonality for all ski resorts snow plays a role because they are all the winter sports destinations. However, the complexity of barriers has been recognized by some of the respondents, but with a different scale of importance (D4, Z9), for instance, some named 'snow' as the definite barrier (D1, D2, D3, D4, Z9), one mentioned also 'a strong wind" (D1, D3), another, above all – rain (D1) and another less important barrier – Rugby weekends that keep customers especially the entire families away from skiing (with the smile on his face, D1).

> *…we have started earlier…about the 16th of December and it was all done about 19th of February. We would normally expect to ski until the end of March, but we did not even reach the end of February last year 2012. It was a very very mild April. We have 21 ski lifts here covering big area as long as we have enough snow (D1).*

Similarly, another interviewee said:

> *this year we seem to have okayish snow….it is sometimes difficult, but is what mother nature sends us (smiled)(D3).*

D2 pessimistically but with high confidence mentioned that when there is no snow, they just stay closed. D1's position with regard to an inevitable closing of the ski resort corresponded coherently with D2's opinion. D4 expressed concern about snow, but tried to moderate the phrase about closing the ski resort due the snow deficiency.

> *Until the start of November there were not snow and then very quickly we've got a lot of snow. December, I think, was quite good. But then we had to close the main hill on the 24th of December because there was not enough snow (D4).*

In contrast, the respondent Z5 said that the lack of snow was not a crucial factor because of a special natural ice ring for events, which suffered due to a huge amount of snow. Even though the climate change could be sensed, but they applied successfully an artificial snow as a guarantee of stability for skiers. He controversially added:

> *look at this view beside you. This is the biggest natural ice ring in Europe. This ring is a little bit smaller as you can see, on the left side and on the right side, there are a little mountains of snow because they always have to push the snow aside. There was so much of snow, that the size of the ice ring is smaller than usually. This is what we have to say and it is a very good example. The season days of this ice ring has been recorded and because it is a natural ice ring not frozen artificially, it depends on the temperature, when they can open the ice ring. The season, if you look at it over decades, the seasons have become significantly shorter. That is a clear sign that the winter season has become warmer or shorter. If at one point snow goes away, you can not bring the people to the peak or people can not come back because the snow has gone. So we have the technical snow production to guarantee that the ski resorts can operate the whole season (Z5).*

Z5 and Z6 both confirmed the importance of snow especially for the beginning of the ski season.

> *And to guarantee a season start (not in all ski resorts, in two mains: Z5 and Z6) – they guarantee a season start in the end of November till Easter or till after Easter. It depends a little bit on whether Easter is in the beginning of April or end. This year is in the beginning of April so Z6 is one week longer and Z5 – two weeks longer. The end of season depends very much on the ski resorts. If the ski resorts are not open, there aren't any skiers or snowboarders coming (Z5, Z6).*

An interesting interpretation was given towards the unity of snow and sustainability. Z8 stated that nobody would forecast whether it would be a lack of snow or too much snow and this statement was already sustainable. People's unawareness or presumption with regard to the weather is sustainable, which required, without any doubt, to apply adaptation strategies to stabilize the winter season (Z5, Z8).

In the aggregate with snow another challenge is a strong wind, which by nature blows away the snow cover. To fight that force of nature ski resorts in Scotland require a snow fencing.

> *in Scotland you have a lot of wind and you need a snow fencing for accumulating the snow if there is a snow and as you could see. There are now areas, where there is no snow at all and lots of areas, where is going to be 4 meters deep (D1).*

Another barrier of sustainability recognized by all the interviewees was an exchange rate. However, the Scottish ski resorts (D1, D2, D3, D4) being predominantly dependable on the local customers but not the foreigners were concerned about the exchange rate, logically and understandably, less. D4 also confessed that they did not monitor customers' profiles very well with the precise figures:

…it was recently done during the summer months. I was personally sitting myself here, but we don't get a lot of information here. There is a sized proportion of Dutch and German and other visitors. I don't have a break down figures. Through the skiing customers it does seem more focused around Scotland, yes Scotland, England and Ireland, plus coasts and Northern Island (D4).

D2 confirmed that they had captured customers' names, when they rent equipment in order to provide them something extra sometimes. D3 clarified or justified apologetically the absence of tracking systems that the loyal customers she had known by their faces because of 10 years of work there, but not the names. Moreover, in the view of the fact that customers are mostly locals there was a neutral attitude towards the exchange rate barrier as the significant barrier of sustainability:

…a lot of people from the central belt, but we do get Irish, we get Chinese… Actually, quite a few Chinese. I don't know, whether they are Chinese (smile), but Asians. Very mixed, but mainly our customers are from the central belt (D3).

D3 also specified that the central belt means from Scotland, which is the area of highest population density within Scotland; hence the customers are mostly locals.
An important remark has to be provided at this point that according to Z5 there are six ski resorts here and five of them (Z5, Z6, Z7, Z8 and Z9) are run by one company. Z6 confessed and confirmed that there isn't any tracking system among all 5 evaluated Swiss ski resorts in Davos (except for one, which was excluded from the field work of the current research). Z6 also noted that hotels within the area try to detect their customers, but the ski resorts obtain only the information about numbers but not personal details:

…customers have different options to book: they can book in our systems, they can book in a system of a hotel and they can also book, let's say at the booking.com and then we don't have control….and I think, there is a

difference from a hotel to a hotel somehow, like smaller hotels, which offer more family approach. They work a lot with customers who come every year to ski. If you have a bigger hotel, or a hotel, which belongs to an international company like Sunstar, they will probably have a higher fluctuation of guests. We, ski resorts, don't know here in our main office about these customers. We only know month by month; we get from the hotels the list of how many people (guests) they have and from which country. So we get the numbers but not personal contacts. So this is a little bit difficult to say (Z6).

Consequently, a lack of the tracking system was recognized to be a barrier of sustainability. Z7 also admitted that:

we have a lot of traditional customers, who come every year or every season. If you look at where people come from here to Davos, the main groups are Swiss customers, followed by German customers. Third, I think, is Netherlands and UK. For Klosters it is a little bit different because of the German customers, first, Swiss customers, British customers and a lot of these people they come back every year (Z7).

Comparing with the Scottish ski resorts (D1, D2, D3, D4) an entirely diverse attitude towards the exchange rate barrier has been expressed by all Swiss ski resorts regardless the local customers' orientation (Z5, Z6, Z7, Z8, Z9) and all agreed upon the strength of Swiss Franc over another currency, which had two-sided affect. Some of them (Z5, Z6) named this barrier to be of a high significance:

...like most of winter seasons in Switzerland because of probably currency exchange situation (pounds and euro) we have lost guests from the European Union, but were stable but with even more people from Switzerland, which is for us very important, also for Swiss people it has become more cheaper to have holidays in Austria, France or Italy, we succeeded to keep the rise of Swiss people, Swiss guests, but we lost especially the German and the UK

market. Germany is very important for Davos and UK is very important in Klosters (Z6).

Thus, not only the exchange rate demotivated and, as a result, prevented foreign tourists to come skiing to Swiss ski resort, but also drove away Swiss customers to spend their holidays abroad due to the cheap prices caused by the other currencies' fluctuation. Z5 provided an overall summary of the decline (comparing with different years) initiated by the economic barriers for all Swiss ski resorts of Davos including the exchange rate:

it was continuous small decline of demand, but I will have to say if you compare it with the year 2009 (three years ago) that was the absolute peak because before since 2003 the numbers in winter time went up as a part of the world wide economic, which was doing very well: people had a lot of money and then in 2008 and 2009 it was a beginning of bank' crisis, at first, and after the bank crisis it was a world economic crisis and now we have the currency crisis. So since three years we faced economic crisis, which do affect tourism (Z5).

A next barrier of sustainability indicated by the ski resort managers was competition. D1, D2, nevertheless, claim that despite the fact that they all compete with each other due to the close location, they try to collaborate.

we all collaborate and quite a lot together. We help each other out with spare cabs when anyone is stuck elsewhere (D1).

D3 admits that all ski resorts in Scotland stay in touch, but this is it. Her ski resort does not collaborate because they, in the end of the day, are direct competitors.

Moreover, an overall summary for Swiss ski resorts in terms of competition as a barrier is:

the main competition is not between Davos and St. Moritz, St. Moritz and Davos, and the Austrian ski resorts. The main competition is the Mediterranean Sea and the mountains. That is the basic decision people do take especially in winter times, when they decide – do we want to spend holidays in the mountains or do we fly for 300 euros to Turkey including flights, 4 stars hotel for 7 days and only for 300 euros. That is the main competition. Especially in the situation we are facing now in the Mediterranean area. Greece is collapsing and the tourism in Greece goes down with the prices incredibly. Turkey is rising and very very cheap. Egypt is collapsing and going down with the prices. Tunisia is collapsing, but not collapsing, but facing a complete change and as a factor of political rumours. The moment when people preferred to enjoy the sun, we lost these customers. The biggest challenge - to keep people interested in winter sport (Z6).

It was not surprising to notice that the position of these ski resorts is frequently similar regardless of the matter and this view about the competition was not an exception. It could be explained by the ownership specification. There are 6 ski resorts in Davos but 5 of them are run by one company, one management team and autonomy of every ski resort is in a way fictional. There is one general manager and 5 assigned representatives emplaced with the strict subordination to the company and general manager of the company (Z5 to Z9).

In line with the aforesaid, some interviewees listed a few other barriers like the health system change, which impacted on the decline of visitors (in this case patients, who might use their spare time in the ski resorts):

yes, we have clinics, but only three comparing to 37 in 1920. The health system has changed and we, ski resorts, cannot control it. The system sends people to a certain place. Plus, illness and holidays are different things (Z8).

Moreover, D1 also admits that the frustration and dilemma occur with the season tickets and measurement of the ski resort performance. Season tickets system makes

it hard to get precise numbers of skiers and develop a strategic plan for next years especially with an absent of the customers tracking system.

> *The winter is measured by ski days. One person here for one skiing a day, so someone who buys 5 day ticket, that would be 5 skiing days. Somebody with a season ticket, it is calculated depending on how many days were open for skiing and how much of availability.*

Another barrier - the official closing of the Government programs to support skiing among children, which used to be compulsory in Switzerland (Z5, Z6, Z7, Z8). In addition, the cultural diversification played a negative role for skiing. In every school a proportion of local Swiss kids decreased and the foreign children, who are not originally Swiss, unfortunately, do not share the same passion for winter sports. As Z5 stated, skiing is in Swiss DNA. Therefore, the decline of young people has continuously progressing due to described reasons. The same opinion but with the slightly different angle D1 and D4 (the Scottish ski resorts) highlighted a need to use incentives with the Government support for children to ski more in Scotland.

Despite the actual and potential barriers for ski resorts in Scotland a concluding sentence was expressed, which sounded like an encouraging and inspirational motto not to give up on ski resorts business:

> *People think if they can ski in Scotland they can ski everywhere. Not everything is perfect (lifts, the on going concern about the environment), but it is going to be always challenging like life in general (smiled) (D4).*

All participants agreed 100% (D1, D2, D3, D4 and Z5, Z6, Z7, Z8 and Z9) that there are ways to overcome the indicated barriers in the forms of strategies, but demonstrated different approaches, which will be covered next.

4.2.3 Respondents' View on Adaptation Strategies

The first debatable adaptation strategy revealed to be the marketing approach in order to survive and increase profitability.

> *We have a lot of marketing campaigns together with the Graubünden area and Swiss tourism. It is too expensive and nobody can afford to make their own marketing campaigns. So we work in collaboration. We have the collaborations for Switzerland tourism for Germany and for UK, we collaborate with Eastern Europe, Austria, Scandinavia. We are now preparing collaborations together with St. Moritz, with Railway system for Indian, Chinese and Russian market. But think about marketing campaign for India and in Davos with small population, you are completely lost. The main challenge and brand for the countries like that people should know and know Switzerland, Swiss quality. You have to attract and convince people in India or China to make holidays and visit Switzerland and if you succeed, they will come to Switzerland. Then you have a chance to persuade them to come to Davos, but you cannot ask them in their country to come to Davos right away. Why should they go? Davos has an advantage due to the World Economic Forum and people in India and China probably know Davos as the World Economic Forum place. Maybe, they don't know that we are the winter sports resort. So for us these kinds of collaborations with Switzerland tourism are very very important to develop a new market (Z7).*

For all Swiss ski resorts (Z5, Z6, Z7, Z8, Z9) one of the most important strategies to overcome any barrier and stabilize business is events especially in the Congress Center. Those are the guaranteed customers, who would definitely come and thus, according to the respondents, was and would be sustainable:

> *Probably Davos destination is with biggest and strongest events in Switzerland and we are the only destination in the Alps with the Congress Centre, with congress business. For sure, events and congress business stabilize the season. If you have a World Cup event, those people, they will come, whether there is snow, rain or sunshine. They will come because of the*

event. With Spengler Cup teams, fans will come, whether it is cold or warm. They will come and the same with the congress business. It is a very long-term business. Now we are engaged in making deals until the year 2021, hence, the congress business is a long-term business. In other words, nobody knows which kind of weather it is going to be in 2020. Nobody knows, whether, it will be a lot of snow or few snow but those people will come. It is sustainable! The events make it sustainable and if the Swiss Frank is more expensive but we contracted those events in 2020, the people will come. This is very different how a normal tourist nowadays acts. They book very short term depending on a special offer, the weather forecast or snow conditions and events and the congress business help us to stabilize the season (Z5).

One of the Scottish managers disclosed:

we don't apply any innovative strategies…as I was saying, our biggest challenge is a Scottish weather. There is no definite winter season and you cannot say and you can not say that the winter will start in December and end in April. You can't forecast it…so it is very difficult to make too much an advanced plan because you just have to be flexible and very adaptable (D1).

However, he contradicted himself afterwards:

if nothing is there…walking tours or whatever…the amount of money you would need to generate so that people go walking…it is too much money. My argument about why wouldn't you diversify into other things is…how many people know we are at 2000 feet here in Scotland and how many people in Scotland walk at 2000 feet? It is not like in a continent with a thousand meters and a nice climate. Not many people would want their leisure to be walking…maybe (smile) - 5 (D1).

When the researcher asked one of the participants, whether they apply or plan to apply any innovative or adaptation strategies the reply was very short and

paradoxical in terms of misinterpretation of the strategies' goals, conditions and more importantly, time frame. The response has indicated a lack of a clear notion with regard to when the strategies are needed: with lots of customers on the premises or during the period of ski resorts business hiatus.

> *nope…it is not busy enough (D2).*

The same participant contradicted himself a few times by also saying that they don't have any loyalty programs and don't keep track of their customers' profiles, nevertheless, a minute after D2 added:

> *yes, we capture their names when they rent skis so that we can offer them something (D2).*

D2 was brief and precise saying that it was not busy enough for any strategies. In terms of planning D3 confessed:

> *for events it is mostly on a week basis because we don't know how the snow is gonna be. We might plan something for middle March, for example, but we have not snow, so that we just have to ….we do plan things but more hope than know for sure. But we have got a five-year development plan (D3).*

Another strategy for ski resorts, which operate all year round or at least try to operate, is summer activities and special packages:

> *In the summer season there is only the main cable. They transport mainly hikers and bikers and there is only one resort, which is fully opened in summer time, the rest – only the main cables sometimes (Z5).*

Snowmaking, as a strategy to sustain the ski resorts business, has both advantages and disadvantages.

How do you sustain your business? Well… by snow making (and we do have some), but snowmaking is not a solution for Scotland. Snowmaking works well in a dry continental climate and we are in relatively mild climate and we don't normally lack of precipitation in Scotland (smiled) and snowmaking is all about to induce precipitation, so it is not a solution. So that is not a lot we can do to negate a snowless weather here in Scotland. The best we can do – has to be able to react to any level of snow...from a very very small winter to large winter. We will have to make the best of a good winter and also to be able to run at a very low cost (D1).

D2 applied the snowmaking as well as D3:

no, no, we have got a snowmaking equipment, but we are only trying it. So I would say 98% of our snow is natural (D3).

Like D2 and D3, D4 organized a trial with a snow gun machine:

we are doing a trial with one company along with a snow gun machine. We did try one, two years ago but every time we tried it on, it started snowing again…this was a test. The results were good in a way. It has constrains on operating it, like it needs quite a powerful water supplies so had to input more but it definitely improved skiing (D4).

Most of the ski resort is Switzerland tend to use an estimate of 30% of a technical snow (Z6, Z8, Z9).

…one solution is, especially to keep demand up and ski resorts running, a technical snow production. We are different than some French or Austrian ski resorts in all the resorts, which use 100% of the technical snow. We have about 30% of the technical snow, which means these are in the ski resort if you lose snow in a specific point in a ski resort, the whole ski resort collapses (Z5).

Advertising as an adaptation strategy seems to be an expensive one and all the respondents in unison confirmed that (D1, D2, D3, D4, Z5, Z6, Z7, Z8, Z9).

> *…yes, but we don't really advertise because we can't afford it. The radio phones us for their program every weekend and we do provide a report for them. We don't do enough advertising….yeah…we can not really afford it (D3).*

However, when opportunities arise to be grasped Scottish ski resorts try to engage the marketing tools:

> *…when opportunities come along all work together to integrate with VisitScotland and SkiScotland.. In the SkiScotland website there is a lot of marketing involved…We are focused on the media opportunities, when they come along (D4).*

However, they do collaborate with VisitScotland, have their webpages and use Facebook, for instance, a closed group for skiers (D1, D2, D3 and D4). Facebook was proven according to D1 to be a vital source of the instant information predominantly about the weather:

> *...facebook, yes…because in some of our information, up-to-date information…you know, there is not point of advertising two mouths in advance. You know when you don't know if you have snow. You have to be very reactive when you've got snow then you can post you have snow, plenty of snow and good snow. So it is all about getting this message out very quickly (D1).*

A so-called substitute of skiing for some ski resorts (D1, D4, Z9) and an additional source of income when there is a snow deficiency (Z7) or for some (D4) - summer activities.

It seems that it is a difficult one for a lot of people to come along and just go for a walk. Expectations of what you do are different. You usually go on a vacation to ski but not to walk, or you go hiking. So there is a demand to do that. This year we have been doing more walks, so there seems to be a demand for people to take a train and come here for a walk. They are not going to the areas, where there is a danger that is why this year we are continuing the guided walks. We are operating with the guides so that we control the numbers; we know what is happening, we can monitor the damage along with the work, which rangers do. We could monitor the erosion. It all could be monitored to make sure that; there is no impact on a good work to improve a landscape. We are also doing the 'Walk Express' by bicycles, which is around 300 metres. Of course, the idea is not to tell people that you could not do something. Hopefully, it will bring some more business. There are plans to see the feasibility of concentration mountain biking in the air. This is still in progress. The company seems to take us to diversity (D4).

As it has been revealed, the main obstacle to overcome is people's perceptions. When they think of any winter ski resort in general, the first word that logically comes to their minds is 'skiing', but not 'mountain walking', for instance or any other activity. There was apparently a slight increase of demand for walking, however, another problem might occur – a danger to walk without a guide and that requires hiring a trained staff. Nevertheless, as D4 indicated they had taken a road to the diversity.

Another adaptation strategy is price. Officially Swiss ski resorts do not reduce the prices as a strategy. They might only provide and extra value for the high price:

officially we are not going to decrease the prices…officially, but we are the management and we can advise our clients or our hotels to make special arrangement, but we advise to keep the price but provide an extra value, for the same price – the extra values. If you start reducing the prices, it is very

dangerous. At the end of the day it is up to the hotel or each shop, how to fix the price. It is up to them. We advise to give extra value for the high price, to take an extra care by offering the best quality. It could change (could turn back), but personally, I don't think it will turn back within a half of the year. We don't believe in that. I think, there are too many other big problems with the European economics and countries and they won't solve these problems in half of the year. So the situation will be like that for a long time (Z8).

Nevertheless, with regard to the price as the strategy and indicator of flexibility of the Swiss management during the summer time there is an agreement among all ski resorts in Davos (including the 6th ski resort) that if a customer stay in a hotel or in a commercially rented flat, he or she will get "Davos Klosters inclusive", which means:

there is a special offer in summer time in Davos – if you stay in a hotel or in a commercially rented flat, you will get "Davos Klosters inclusive". For every night you get this guest card and with this guest card you can use all the cable cubs here for free and also the local bus service and rail ways from Davos to Küblis. You can use the public transport including all the mountain cables for free (Z7).

According to his smile and tonality of the voice the following manager seemed to be very excited about that special offer, which has been providing to the customers for 8 years. Above all he even highlights that it allows adding an extra value in comparison with some Austrian ski resorts:

…this is the extra value. You paid the hotel and you get all the public services, transport services for free. Very often there are not so many destinations, which have it in some time. It is always difficult, if you compare a hotel in Davos with a hotel somewhere in Austria. Ok, you compare the hotel price for the night, but if you have to pay 20 euros to get up to the mountains (Z7).

The interviewer commented right away that one could feel it in a pocket by paying every time extra euros for the transportation in Austria and saving money in Z7's ski resort. The reply was with a double degree of enthusiasm, excitement and pride:

> *…absolutely! (smiled). You feel in your pocket especially if you are a family, four people. Here in Davos it does not matter, how many people stay in a flat near a ski resort: if there are two people staying, two people will get "Klosters Card Inclusive", if the family with three children – all of them will get the card (for two adults and three children). So if you stay in a commercially rented flat in summer you get all public transport for free.*

The mentioned strategy (flexibility with a price at least during summer) provides a significant competitive advantage for all five Swiss ski resorts in Davos.

Overall, Swiss managers in Davos tend to agree that solutions could be developed and strategies could be planned, however, the key factor is to maintain a perfect quality of business for a high price.

> *…the solution is not for the crises like world economic crisis or currency exchange crisis. For that you don't have a solution. What we can do is to keep up a good work, to guarantee a perfect quality for a high price (Z6).*

Sceptics frequently criticize qualitative data analysis procedures of being subjective. In order to ensure the reliability of findings in a qualitative study the academic literature offers to calculate the Kappa Coefficient, which displays a coding consistency (Carey et al. 1996). The Kappa Coefficient will be revealed below.

4.2.4 Kappa Coefficient - Reliability of Results

Kappa Coefficient measures statistically the amount of agreement that could be expected to arise through chance (Carletta, 1996). For this thesis the Kappa value

was calculated using the Coder Comparison Queries in the Navigation View of the NVivo. Coder Comparison Analysis provides information about: Node Type, Node, Source Type, Source, Source Folder. "Source Size, Kappa Value, Agreement (%), and the possible agreement patterns [A and B (%), Not A and Not B (%), Disagreement (%), A and Not B (%) and B and Not A (%)], in which case, A is defined by one of the selected node coded by the researcher and B is the selected node coded" by the person chosen to be an expert (Ishak and Bakar, 2012, p. 101). NVivo assisted in determining the rates for the percentage of similar codes, so called reliability statistics (*kappas*). The whole process of comparing coding among several coders is called *intercoder agreement* in qualitative research (Creswell and Plano Clark, 2011). The researcher has created a separate file for the expert to code the data. It has been decided to compare an agreement of all the nodes in all 9 interviews because the Kappa value increases when more nodes and text are used for the purpose of comparison (Ishak and Bakar, 2012).

The table below demonstrates the commonly cited scale of the Kappa Coefficient Values and Interpretations.

Table 4-1 Kappa Coefficient Values and Interpretation

Kappa value	Interpretation
Below 0.00	Poor agreement
0.00 – 0.20	Slight agreement
0.21 – 0.40	Fair agreement
0.41 – 0.60	Moderate agreement
0.61 – 0.80	Substantial agreement
0.81 – 1.00	Almost Perfect agreement

Source: adapted from (Ishak and Bakar, 2012, p.102).

According to Table 4.1 a coefficient will vary between 0 and 1. The closer the Kappa coefficient to 1, the higher the agreement and better the inter - observer consistency (Bryman and Bell, 2007). The Kappa Value for this thesis was 0.82 – almost perfect agreement, whereas, a value from 0.61 to 0.80 means an agreement is substantial; from 0.41 to 0.60 is considered to be moderate; the range from 0.21 to 0.40 indicates that agreement is fair; from 0.00 to 0.20 the agreement is interpreted as slight and below 0.00 – poor (Ishak and Bakar, 2012).

4.3 Conclusion

From the results presented in this chapter after the Phase 1, it became evident that the concept of sustainability is viewed differently by all the interviewees; the elements of sustainability are very often misunderstood. It was also discovered that the barriers of the sustainability and their coping mechanisms had empirical evidences of both advantages and disadvantages. Furthermore, the findings elucidated that the adaptation strategies had faced a few dilemmas during the planning period and implementation phase.

In order to ensure the reliability of findings from the interviews the Kappa Coefficient was calculated to determine a coding consistency. The Kappa Value for this thesis was 0.82, which indicates almost perfect agreement according to the scale of Kappa Coefficient Value and Interpretation (Table 4.1).

A thematic analysis and interpretation of the findings from the interviews will be provided in the discussion and analysis chapter and the NVivo software will assist in this matter.

4.4 Findings from Delphi

This chapter reveals the findings from the Delphi Study, which was conducted between November 2013 and July 2014.

4.4.1 Introduction

The aim of the Delphi was to develop a set of determinants prior to a selection of a model of relevant indicators for generic ski resort use. For the purpose of obtaining some clarity, finding a consensus among scholars and reinforcing anecdotal assumptions with academically acceptable definitions the first round of the Delphi has been constructed intentionally in the most suitable manner as the opened ended questions about definitions and questionnaire. Therefore, the facilitator made a decision to look for a compromise about the definition of sustainability indicator firstly. In the section about the definition the experts could debate and reach a consensus about an explanation of the phenomena before filtering the established determinants because the common understanding of a research area is vital for the results to be valid and reliable.

The conducted Delphi Study consisted of a series of three consecutive rounds of questionnaire generated to the panel of experts in the areas of sustainable tourism, sustainable indicator and adaptation strategies for ski resorts. During the entire process of the data collection the ultimate goal was to address the second aim of the research, however, every single round of the Delphi was pursuing an individual goal. For instance, Round One was composed of a few open-ended questions about the definitions, their actual and potential criteria. Plus, the facilitator has also launched a survey with a set of carefully selected determinants from the academic literature in order to either narrow them down or extend by filtering them, weighting and analyzing. The second round developed a questionnaire which was more precise and took into an important consideration every comment from the round one with an aim to continue weighing the determinants and obtaining a compromise among the experts. The final round has taken into account the MEAN, percentages, standard deviation, median, maximum and minimum variables from the SPPS as the objectively validated indices. Thus, the round three targeted to scale the variables in order to reach a solid consensus justified by the statistically proven data.

According to the demonstrated explanation and justifications the following chapters have been divided in three sections with regard to the findings from the first, second and third rounds of the Delphi Study.

4.4.2 Round 1 – Definitions

The aim of the first part of the Experts Survey was to find a consensus regarding the definitions about the sustainability indicator and model and their essential elements. The participants were asked to comment whether they agree upon the offered definitions and desire to expand or improve them. In addition, in relation to the model of SIs the questions about additional factors and priorities to be considered by ski resorts were also set by the facilitator in order to get a comprehensive idea about the area of the conducted scientific research. Appendix Six illustrates comprehensively the Experts Survey Round One. The findings revealed a few debatable issues.

The proposed definition has been combined from the academic literature:

> *A sustainability indicator (SI) is a variable which can take a certain number of values (statistical) or states (qualitative) according to the circumstances (temporal) that influence or might influence sustainability, therefore, a model of sustainability indicators for any ski resort destination is a tool that can be applied to a long term strategy which measures and weights not only the outer (external) sustainability with all its components (politico- economic , socio-cultural, environmental), but also the inner (internal) sustainability of a ski resort towards its business sustainability and viability.*
>
> *Outer (external) sustainability may operate with a certain set of sustainability indicators in the form of a model of sustainability indicators that predominantly evaluates an impact (positive or negative) towards the components of sustainability. Inner (internal) sustainability may operate with a set of sustainability indicators for the internal use generated from the actual or*

potential adaptation strategies in order to provide a business sustainability and viability for a ski resort.

The results have shown that the Delphi Experts did not find a common ground initially about the definitions and suggested to add more components to the definition. The facilitator had to include all suggestions in order to filter them in the next round with the purpose to find a consensus. The Likert scale was used to weigh the experts' opinions.

Table 4-2 Offered Components to Definition of SI, Model

Components	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Help to illustrates areas where more policy action is needed	☐	☐	☐	☐	☐
Benchmark to compare between regions and resorts	☐	☐	☐	☐	☐
Avoid difficulties by means of quantitative indicators due to the regions diverse characteristics and situations	☐	☐	☐	☐	☐
Provide and instrument for monitoring and comparing progress realized in regions and resorts	☐	☐	☐	☐	☐
Merit, identify and calculate sustainability using different formulas	☐	☐	☐	☐	☐
Include economic viability	☐	☐	☐	☐	☐
Be less holistic and more precise towards tourism enterprises	☐	☐	☐	☐	☐
Provide a useful information on a sustainable performance of a ski resort	☐	☐	☐	☐	☐
Be based on a process of sustainability	☐	☐	☐	☐	☐

assessment that directs decision-making towards sustainability					
Provide useful information enabling sustainability direction and progress to be determined	☐	☐	☐	☐	☐
Be a weak proponent of sustainability	☐	☐	☐	☐	☐
Be a strong proponent of sustainability	☐	☐	☐	☐	☐
Consist of narrow explanations to reach simplicity	☐	☐	☐	☐	☐
Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each.	☐	☐	☐	☐	☐
Need to include more environmental issues regarding ski resorts and hence, stakeholders will be able to foresee the opportunity costs of the development and activities	☐	☐	☐	☐	☐
Acquire meaning in a system as a whole and must be interpreted within some values/data of reference	☐	☐	☐	☐	☐
Be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development	☐	☐	☐	☐	☐
Help to make a diagnosis and monitoring of the information collected	☐	☐	☐	☐	☐
Be used as instruments and techniques for planning and management the ski destinations.	☐	☐	☐	☐	☐
Identify strengths and weaknesses of	☐	☐	☐	☐	☐

the ski resort management					
Correct negative impacts	☐	☐	☐	☐	☐
Inspire policies to apply corrective measures and also to evaluate current policies	☐	☐	☐	☐	☐
Become a measurement not only for the sake of it, which has no value but to pursue changes	☐	☐	☐	☐	☐
Enhance the sustainability of a destination as a way to improve the competitive position of the destination.	☐	☐	☐	☐	☐
Include temporal and spatial scale	☐	☐	☐	☐	☐
Be dependent on the type of ski resort	☐	☐	☐	☐	☐
Be linked to the dynamics of the main elements of a resort over time	☐	☐	☐	☐	☐
Illustrate the level of performance, hence the progress achieved	☐	☐	☐	☐	☐
Clarify what aspects, assets, actors and activities are targeted	☐	☐	☐	☐	☐
Focus more on the elements which are a higher importance for a specific ski resort	☐	☐	☐	☐	☐
Be based on all components of sustainability but the components can be treated equally	☐	☐	☐	☐	☐
Reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability.	☐	☐	☐	☐	☐
Not be snapshots in time of certain impacts	☐	☐	☐	☐	☐
Measure the inner sustainability of a	☐	☐	☐	☐	☐

ski resort, its stability and surviving in a long run					
Aim to help ski resorts to function and survive, but other assessments towards their impacts are less important	☐	☐	☐	☐	☐

Table 4.1 illustrates transparently all alterations of the definitions generated by the panel during the First Round of the first part of the Experts Survey.

The aim of the second part of the Experts Survey was to find a consensus regarding the sustainability determinants. To implement a narrow set of sustainability indicators specifically for ski resorts an academic literature suggests formulating at first, the elements or determinants which might be in the forms of adaptation strategies. Only after the elements are analysed and weighted a ski resort can develop and apply a model of relevant sustainability indicators in order to avoid applying the existed broad models with a long list of sustainability indicators. The findings assisted to discover that there were the elements which obtained a consensus among all the Delphi Experts without an exception during the First Round and on the Likert Scale reached 7 (as very important). It allowed not using them for the next consecutive rounds because they did not require being further weighted by the Delphi Experts and proved to be of a high importance in terms of their implementation for ski resorts' business viability. With regard to the changing environment the following adaptation strategies (determinants) for a ski resort reached the consensus:

- An artificial snow making
- Development of higher terrain
- Cooperation with other ski resorts

With regard to the changing in government polices about sustainability the following adaptation strategies (determinants) for a ski resort reached the consensus:

- New policy adaptation
- Cooperation with another ski resort and implementation of new policies in collaboration

With regard to the changing economic climate the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Cooperation with another ski resort
- Non-snow related activities

With regard to the changing socio-cultural environment the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Reinforcing inhabitants engagement
- Cooperation with another ski resort
- Non-snow related activities

With regard to the changing technology the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Artificial snow making
- Investing in easiness of transportation
- Staff training

In addition, after the First Round there were also elements which obtained a consensus to be eliminated among all the Delphi Experts without an exception based on the fact that neither of them has been even chosen on the Likert Scale. It allowed not using them for the next consecutive rounds as well because they did not require being further weighted by the Delphi Experts and proved to be of a high unimportance in terms of their implementation for ski resorts' business viability. With regard to the changing environment the following adaptation strategies (determinants) for a ski resort were agreed to be excluded:

- Cloud seeding
- Business as usual
- Cancel ski tourism

With regard to the changing in government polices about sustainability the following adaptation strategies (determinants) for a ski resort were agreed to be excluded:

- Requesting a loan from Government to implement new policies
- Business as usual
- Cancel ski tourism

With regard to the changing economic climate the following adaptation strategies (determinants) for a ski resort were agreed to be excluded:

- Decreasing prices
- Increasing prices
- Investment incentives
- Business as usual
- Cancel ski tourism

With regard to the changing socio-cultural environment the following adaptation strategies (determinants) for a ski resort were agreed to be excluded:

- Improving multilingual tools
- Cancel ski tourism

With regard to the changing technology the following adaptation strategies (determinants) for a ski resort were agreed to be excluded:

- Ski slope design
- Alter skiing location

- Cloud seeding
- Development of higher terrain

The remaining elements, which did not obtain experts' consensus, were taken to a second round for further filtering and weighting.

4.4.3 Round 2 – Definition of SI and Model

During the second round of the Delphi the experts were given a possibility to rate their own amendments to the definitions as well as the amendments of other participants in order to demonstrate if they strongly disagree, disagree, have a neutral position, agree or strongly agree. The proposed scale has been coded by engaging SPSS software to analyze the results statistically. Initially, all results from the round 1 have been exported from the Bristol Online Survey and inputted to the SPSS.

Table 4-3 Descriptive Statistics after Round 1

Definitions Components	Min	Max	MEAN	Stn. Deviation
Help to illustrate areas where more policy action is needed	4	5	4.20	.422
Benchmark to compare between regions and resorts	1	5	4.20	1.317
Avoid difficulties by means of quantitative indicators due to the regions diverse characteristics and situations	1	4	2.80	.919
Provide and instrument for monitoring and comparing progress realized in regions and resorts	2	5	4.20	1.033
Merit, identify and calculate sustainability using different formulas	1	5	3.70	1.418
Include economic viability	2	5	3.70	1.160
Be less holistic and more precise towards	2	5	3.40	1.174

tourism enterprises				
Provide a useful information on a sustainable performance of a ski resort	4	5	4.60	.518
Be based on a process of sustainability assessment that directs decision-making towards sustainability	2	5	4.10	.876
Provide useful information enabling sustainability direction and progress to be determined	3	5	4.30	.675
Be a weak proponent of sustainability	1	3	2.30	.823
Be a strong proponent of sustainability	2	5	3.70	1.059
Consist of narrow explanations to reach simplicity	1	3	2.40	.699
Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each	2	4	3.30	.949
Need to include more environmental issues regarding ski resorts and hence, stakeholders will be able to foresee the opportunity costs of the development and activities	2	5	3.60	.966
Acquire meaning in a system as a whole and must be interpreted within some values/data of reference	2	5	3.50	.972
Be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development	2	4	3.40	.843
Help to make a diagnosis and monitoring of the information collected	2	5	4.20	1.033
Be used as instruments and techniques for planning and management the ski destinations	2	5	4.40	.966
Identify strengths and weaknesses of the ski resort management	2	5	3.50	.972
Correct negative impacts	1	4	3.20	1.135
Inspire policies to apply corrective measures and also to evaluate current	2	5	4.10	1.101

policies				
Become a measurement not only for the sake of it, which has no value but to pursue changes	2	5	3.90	.876
Enhance the sustainability of a destination as a way to improve the competitive position of the destination	2	5	3.60	.966
Include temporal and spatial scale	2	5	3.80	.919
Be dependent on the type of ski resort	1	5	3.30	1.252
Be linked to the dynamics of the main elements of a resort over time	2	5	3.90	.876
Illustrate the level of performance, hence the progress achieved	2	5	3.90	.994
Clarify what aspects, assets, actors and activities are targeted	2	5	3.20	.919
Focus more on the elements which are a higher importance for a specific ski resort	2	4	2.40	.699
Be based on all components of sustainability but the components can be treated equally	1	4	2.80	.789
Reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability	2	5	3.90	.994
Not be snapshots in time of certain impacts	1	5	3.90	1.449
Measure the inner sustainability of a ski resort, its stability and surviving in a long run	3	5	3.90	.568
Aim to help ski resorts to function and survive, but other assessments towards their impacts are less important	1	4	2.70	1.160

The proposed elements, which reached the MEAN score 4.00 or above (Table 4.2.2 highlighted in blue colour), indicate that experts either agreed or strongly agreed (over 80%) and the definitions have to be altered accordingly. Therefore, it has been decided not to filter these elements in the subsequent round. Other components,

which had a MEAN below 3.00, have been excluded from the next round. They are shown in bold (Table 4.2.2). The remaining elements in the range between 3.00 and 4.00 have been taken further through the weighting process of the third round of the Delphi in order to identify their relevance to the definitions (Table 4.2.2, highlighted in yellow colour).

To validate more the results of the reached consensus elements with MEAN ≥ 4.00 and test the stopping rule the researcher has applied the Coefficient of Variation (CV). CV is the ratio of the standard deviation of the tested item to its corresponding MEAN. If the magnitude of CV is considerably large (more than 0,5), a posterior modification is necessary and hence, an additional round is essential. In contrast, if CV is less than 0.5 or equal to 0.5, an additional round is not needed (Yang, 2003; Kalaian and Kasim, 2012).

In conformity with this research, for the validation purposes all elements with the MEAN ≥ 4.00, which had been excluded from the round 3, were tested and their CVs were calculated.

Table 4-4 Validity of Results, Consensus after Round 2

Definitions Components, which have reached experts' consensus	CV	MEAN	Stn. Deviation
Help to illustrate areas where more policy action is needed	0.1	4.20	.422
Benchmark to compare between regions and resorts	0.3	4.20	1.317
Provide and instrument for monitoring and comparing progress realized in regions and resorts	0.2	4.20	1.033
Provide a useful information on a sustainable performance of a ski resort	0.1	4.60	.518
Be based on a process of sustainability assessment that directs decision-making	0.2	4.10	.876

towards sustainability			
Provide useful information enabling sustainability direction and progress to be determined	0.1	4.30	.675
Help to make a diagnosis and monitoring of the information collected	0.2	4.20	1.033
Be used as instruments and techniques for planning and management the ski destinations	0.2	4.40	.966
Inspire policies to apply corrective measures and also to evaluate current policies	0.2	4.10	1.101

Thus, according to the Table 4.2.3 the CVs of all elements are less than 0.5, which means further testing was not necessary and the consensus has been reached taken also into a consideration MEAN and standard deviations of the tested elements. In the aggregate, MEAN, standard deviation and CVs reinforce objectively and statistically the facilitator's weighted position and demonstrated justification about the consensus of the evaluated components to the definitions of sustainability indicator and model. Logically, these items have not been included to the round three. There is, however, a debatable issue whether these elements need to be included for the next round or not; hence, the panel could see the components with the reached consensus. Nevertheless, due to the lack of rigorous rules about the Delphi and flexibility of facilitator's choice, the decision has been made towards excluding them in order to make a questionnaire for the third round shorter for the experts for motivational reasons. Besides, the further higher ranking, as it had been demonstrated, was not needed any more (Keeney, et. al 2011).

As for the second part of the Delphi Survey, the aim was to try to reach a consensus about elements or determinants which might be in the forms of adaptation strategies before choosing a model of relevant sustainability indicators. All experts' preferences have been analysed. The elements, which had not reached 5 (slightly important), were eliminated from the Second Round. The answers, which had scored 7 (very important), were excluded from this round because the consensus among the Delphi

Experts was reached. Hence, for the Second Round the scale has been reduced to three, which is explained in more details in the section below.

4.4.4 Round 3 – Definition of SI and Model

During the third round of the Delphi the experts were asked to revise and validate the outcomes from the previous one. In the line with that, all the results from the Second Round have been compiled in order to create a questionnaire with the embedded feedback from all the Delphi Panel. The Delphi Experts were kindly asked to re-rate their answers with regard to the items which had not yet reached a consensus and the calculated average score was in the range from 3.00 to 4.00. These elements have been taken further through the weighting process for the third round of the Delphi. The items, which reached the average score 4.00 or above, indicated that the consensus had been obtained and hence, were excluded from the final round in order to save time and shorten the questionnaire. The Delphi experts were explained how to re-rate: the components below should be re-rated in a scale of 1 (no relevance) to 5 (extremely relevant) by placing a **number** next to the components in the **Rate** column for each of the sections.

Table 4-5 The Rating Scale

Number	Scale
1	No Relevance
2	Quite Relevant
3	Relevant
4	Very Relevant
5	Extremely Relevant

The Delphi Experts were also offered to re-rate the definition of a sustainability indicator for a ski resort.

Table 4-6 Definition of SI's Re-rate

A definition of a SI for a ski resort should:	Average Score	Rate
Merit, identify and calculate sustainability using different formulas	3.70	
Include economic viability	3.70	
Be less holistic and more precise towards tourism enterprises	3.40	
Be a strong proponent of sustainability	3.70	
Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each	3.30	
Need to include more environmental issues regarding ski resorts and hence, stakeholders will be able to foresee the opportunity costs of the development and activities	3.60	
Acquires meaning in a system as a whole and must be interpreted within some values/data of reference	3.50	
Be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development	3.40	

Identify strengths and weaknesses of the ski resort management	3.50	
Correct negative impacts	3.20	
Become a measurement not only for the sake of it, which has no value but to pursue changes	3.90	
Enhance the sustainability of a destination as a way to improve the competitive position of the destination	3.60	
Include temporal and spatial scale	3.80	
Be dependent on the type of ski resort	3.30	
Be linked to the dynamics of the main elements of a resort over time	3.90	
Illustrate the level of performance, hence the progress achieved	3.90	
Clarify what aspects, assets, actors and activities are targeted	3.20	
Reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability	3.90	
Not be snapshots in time of certain impacts	3.90	
Measure the inner sustainability of a ski resort, its stability and surviving in a long run	3.90	

Another part of the questionnaire was dedicated to the determinants and the experts were asked to re-rate them before choosing a model of SIs.

Table 4-7 Determinants' Re-rate before Choosing Model of SIs

The following determinants should be taken into consideration:	**Average Score**	**Rate**
Nights spent by kind of accommodation	3.70	
Size of population	3.90	
Length of ski runs	3.30	
Prices for public transport and parking fees	3.80	
Economic viability as the main priority	3.30	
Enough business to continue to earn a return on capital	3.90	
Marketing	3.50	
Political Constraints	3.70	
Competition	3.00	
Processes for managing a ski resort with respect to public engagement, decision-making, resource efficiency	3.80	
All aspects of sustainability but treated differently according to vital needs of a ski resort	3.60	
All aspects of sustainability otherwise		

their individual components may have their viability threatened	3.40	
Norms, taxes, sanctions	3.30	
The perception of the locals and also the demand visiting the ski resorts	3.60	
Maximum adaptation to the specificities and needs of the particular ski resort	3.60	
The sources of information available (quantitative and qualitative)	3.50	
Collaboration between the local agents in terms of planning instruments	3.60	
Regular updates to avoid becoming a static diagnosis without continuity	3.90	
Leadership and compromise of the local authorities to nourish the system	3.20	
Strengths, skills of a leader who implements the model	3.70	
Accessibility of a ski resort	3.80	
How the data are used, collected and presented	3.90	
Who is involved in the selection	3.50	
Longevity of the business	3.20	
Market changes as well as to the socio-environmental limitations in the surrounding contexts of the resort	3.90	

Revised sets of indicators	3.70	
Choosing a narrow set of sustainably indicators specific to needs of a ski resort	3.10	
Financial stability	3.40	

Moreover, the experts were asked to re-rate the determinants or adaptation strategies for a ski resort with regard to the changing environment.

Table 4-8 Determinants Re-rate regarding Environment

Adaptation strategies or determinants for a ski resort with regard to the changing environment	Average Score	Rate
Indoor Ski slopes	1.20	
Alteration of time to ski during the season	1.50	

In the next section the experts were asked to re-rate the determinants or adaptation strategies for a ski resort with regard to the changing in government policies about sustainability.

Table 4-9 Determinants Re-rate regarding Government Policies

Adaptation strategies or determinants for a ski resort with regard to the changing in government policies about sustainability	Average Score	Rate
Indoor Ski slopes	2.50	
Alteration of time to ski during the season	1.80	

Further the experts were asked to re-rate the determinants or adaptation strategies for a ski resort with regard to the changing economic climate.

Table 4-10 Determinants Re-rate regarding Climate

Adaptation strategies or determinants for a ski resort with regard to the changing economic climate	**Average Score**	**Rate**
New marketing strategies	1.60	
Revenue diversification	2.70	

In the next part of the questionnaire the experts were asked to re-rate the determinants or adaptation strategies for a ski resort with regard to the changing socio-cultural environment.

Table 4-11 Determinants Re-rate regarding Socio-Cultural Environment

Adaptation strategies or determinants for a ski resort with regard to the changing socio-cultural environment	**Average Score**	**Rate**
New marketing strategies	1.50	
Public education	1.80	

Moreover, the experts were asked to re-rate the determinants or adaptation strategies for a ski resort with regard to the changing technology.

Table 4-12 Determinants Re-rate regarding Changing Technology

Adaptation strategies or determinants for a ski resort with regard to the changing technology	**Average Score**	**Rate**
New marketing strategies	2.40	
Public education	1.10	

The second part of the Delphi Survey aimed to filter and weight the selectively chosen adaption strategies or determinates which had been of high importance prior to selection a suitable model of sustainability indicators based on the academic literature.

In order to increase the reliability of the results the Cronbach's Alpha test was applied, which will be demonstrated below.

4.4.5 Cronbach's Alpha – Reliability of Results

The Round Three Delphi Survey was running for two months and when all the experts managed to fill in the questionnaire the survey was closed. The next step was to process the results by engaging SPSS software to analyse the results statistically.

Initially, all the results from the round 3 have been exported from the Bristol Online Survey and inputted to the SPSS. In addition, the reliability of scores was checked through the statistical procedures of the internal consistency (Creswell and Plano Clark, 2011). For the Delphi technique as the quantitative tool the Cronbach's alpha

test has been incorporated as the instrument to test-retest results, hence, to assess their reliability. The Cronbach's alpha is a test of internal reliability, which calculates the average of all possible split-half reliability coefficients (Park and Gretzel, 2007; Bryman and Bell, 2007).

Cronbach's alpha (α) measures the extent of "how well a set of variables or items measure a single, unidimensional latent construct (Andrew et al. 2011, p. 199). Therefore, each scale correlates with the remaining items in a chosen section of the questionnaire. It indicates the consistency within a particular scale (Law and Hsu, 2006). Cronbach's α values range from 0 to 1 and in the social sciences, values which are ≥ 0.7 are desirable, whereas, values above 0.9 indicates that the scale might be too narrow and are not satisfactory (Nunnally and Bernstein, 1994). The total reliability of the scale with regard to the first part of the Delphi Survey (the definitions) was 0.868 (α). It proves that the level of reliability is quite high within the particular section of the survey taking into account that an acceptable level of reliability for the α coefficient should be any value > 0.7 (Wong and Law, 2004). The internal reliability of the second part of the Delphi Survey (determinants or adaptation strategies) has also been tested and the result was 0.826 (α). This value for the Cronbach's alpha appeared to be desirable demonstrating the internal reliability within each section of the weighted determinants (Nunnally and Bernstein, 1994).

4.4.6 The Findings after All Rounds

The first part of the Delphi Survey aimed to establish an agreement upon the definition of Sustainability Indicator and Model. After three consecutive rounds, which included filtering the offered definitions from the academic literature and weighting further the additional criteria proposed by the experts the following elements have reached the consensus. After all the rounds the Delphi Experts agreed that Definition of Sustainability Indicator and Model for a ski resort should:

- Help to illustrate areas where more policy action is needed **(the consensus was reached after Round 2)**

- Benchmark to compare between regions and resorts **(the consensus was reached after Round 2)**
- Provide an instrument for monitoring and comparing progress realized in regions and resorts **(the consensus was reached after Round 2)**
- Provide a useful information on a sustainable performance of a ski resort **(the consensus was reached after Round 2)**
- Be based on a process of sustainability assessment that directs decision-making towards sustainability **(the consensus was reached after Round 2)**
- Provide useful information enabling sustainability direction and progress to be determined **(the consensus was reached after Round 2)**
- Help to make a diagnosis and monitoring of the information collected **(the consensus was reached after Round 2)**
- Be used as instruments and techniques for planning and management the ski destinations **(the consensus was reached after Round 2)**
- Inspire policies to apply corrective measures and also to evaluate current policies **(the consensus was reached after Round 2)**
- Merit, identify and calculate sustainability using different formulas **(3.70 - after Round 2) VS (3.00 - after Round 3 and re-rating)**
- Include economic viability **(3.70 – after round 2) VS (4.22 - after Round 3 and re-rating)**
- Be less holistic and more precise towards tourism enterprises **(3.40 - after round 2) VS (2.11 after Round 3 and re-rating)**
- Be a strong proponent of sustainability **(3.70 - after round 2) VS (4.33 - after Round 3 and re-rating)**
- Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each **(3.30 - after round 2) VS (4.11 - after Round 3 and re-rating)**
- Need to include more environmental issues regarding ski resorts and hence, stakeholders will be able to foresee the opportunity costs of the development and activities **(3.60 - after round 2) VS (3.11 - after Round 3 and re-rating)**

- Acquire meaning in a system as a whole and must be interpreted within some values/data of reference **(3.50 - after round 2) VS (4.00 - after Round 3 and re-rating)**
- Be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development **(3.40 - after round 2) VS (3.33 - after Round 3 and re-rating)**
- Identify strengths and weaknesses of the ski resort management **(3.50 - after round 2) VS (4.22 - after Round 3 and re-rating)**
- Correct negative impacts **(3.20 - after Round 2) VS (4.22 - after Round 3 and re-rating)**
- Become a measurement not only for the sake of it, which has no value but to pursue changes **(3.90 - after Round 2) VS (3.89 - after Round 3 and re-rating)**
- Enhance the sustainability of a destination as a way to improve the competitive position of the destination **(3.60 - after Round 2) VS (3.78 - after Round 3 and re-rating)**
- Include temporal and spatial scale **(3.80 - after Round 2) VS (4.11 - after Round 3 and re-rating)**
- Be dependent on the type of ski resort **(3.30 - after Round 2) VS (3.22 - after Round 3 and re-rating)**
- Be linked to the dynamics of the main elements of a resort over time **(3.90 - after Round 2) VS (4.22 - after Round 3 and re-rating)**
- Illustrate the level of performance, hence the progress achieved **(3.90 - after Round 2) VS (4.44 - after Round 3 and re-rating)**
- Clarify what aspects, assets, actors and activities are targeted **(3.20 - after Round 2) VS (3.67 - after Round 3 and re-rating)**
- Reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability **(3.90 - after Round 2) VS (4.44 - after Round 3 and re-rating)**
- Not be snapshots in time of certain impacts **(3.90 - after Round 2) VS (3.78 - after Round 3 and re-rating)**

- Measure the inner sustainability of a ski resort, its stability and surviving in a long run **(3.90 - after Round 2) VS (3.67 - after Round 3 and re-rating)**

The second part of the Delphi Survey aimed to filter and weight the selectively chosen adaption strategies or determinates which are of high importance prior to selection a suitable model of sustainability indicators based on the academic literature. The section below finally combines and demonstrates all the final elements from all three rounds of the Delphi Study, including those elements, which obtained the experts' consensus from the First Round.

Adaptation strategies or determinants for a ski resort with regard to the changing environment:

- An artificial snow making
- Development of higher terrain
- Cooperation with other ski resorts
- Indoor ski slopes (non-relevant after all rounds)
- Alteration of time to ski during the season

With regard to the changing in government polices about sustainability the following adaptation strategies (determinants) for a ski resort reached the consensus:

- New policy adaptation
- Cooperation with another ski resort and implementation of new policies in collaboration
- Indoor ski slopes (high ranking of no-relevance after round 2 and 3)
- Alteration of time to ski during the season (after round 2 and 3)

With regard to the changing economic climate the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Cooperation with another ski resort
- Non-snow related activities
- New marketing strategies (after round 2 and 3)
- Revenue diversification (after round 2 and 3)

With regard to the changing socio-cultural environment the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Reinforcing inhabitants engagement
- Cooperation with another ski resort
- Non-snow related activities
- New marketing strategies (non-relevant after round 2 and 3)
- Public education (extremely relevant after round 2 and 3)

With regard to the changing technology the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Artificial snow making
- Investing in easiness of transportation
- Staff training
- New marketing strategies (after round 2 and 3)
- Public education (after round 2 and 3)

Therefore, the weighted and validated sustainability determinants in the form of the adaptation strategies are a framework for a future selection of a model of SIs for generic ski resorts use. The figure below demonstrates the new framework, which is a significant original contribution of this thesis to the field of knowledge.

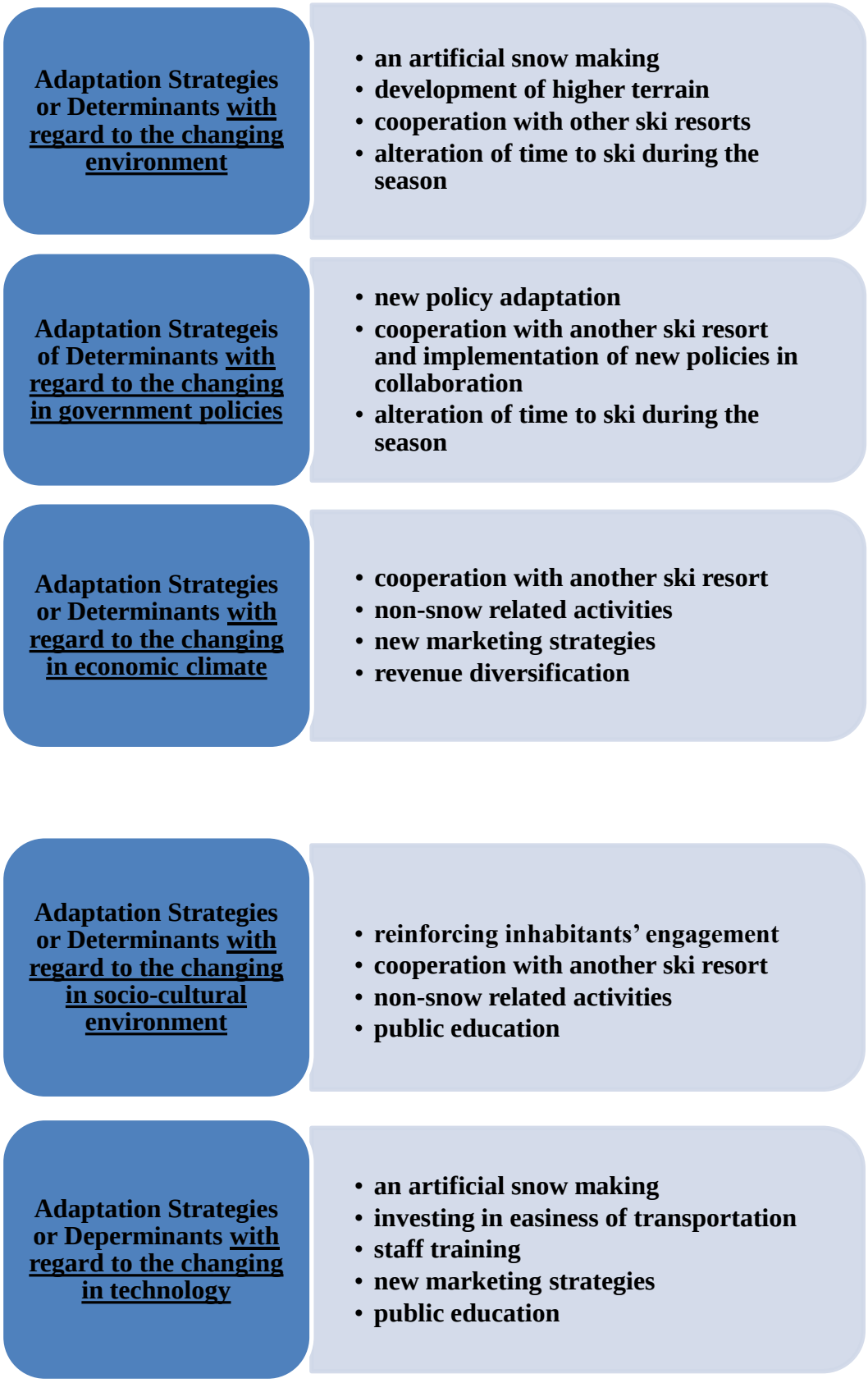


Figure 4-2 New Framework

A new filtered and weighted set of sustainability determinants aims to increase ski resorts business sustainability and viability. An interpretation and analysis of the findings will be demonstrated in the Chapter 5.

4.5 Conclusion

From the results presented in this chapter after the Phase 2, it was discovered that some elements were not considered to be significant by the experts because their Coefficient of Variation was less than 0.5, hence, it was not necessary to further filter and validate them. The proposed elements with regard to the definitions, which had the MEAN below 3.00, have been excluded from the next round and those, which reached the MEAN score 4.00 or above (Table 4.2.2), demonstrated that the Delphi experts either agreed or strongly agreed (over 80%) and the definitions had to be altered accordingly.

To validate more the results of the reached consensus elements with MEAN $\geq$ 4.00 and test the stopping rule the researcher has applied the Coefficient of Variation (CV). If the magnitude of CV was considerably large (more than 0,5), a posterior modification was necessary and hence, an additional round was essential. Moreover, the remaining elements in the range between 3.00 and 4.00 have been taken further through the weighting process of the third round of the Delphi in order to identify their relevance to the definitions. It became evident that the compromise after three rounds of the Delphi has been reached, which reinforced the validity of the selectively chosen and weighted adaption strategies or determinates, which were of high importance prior to selection a suitable model of sustainability indicators.

The Cronbach's alpha test has been conducted as the instrument to test-retest results, hence, to assess the internal reliability. The total reliability of the scale with regard to the first part of the Delphi Survey (the definitions) was 0.868 (α). It indicates that the level of reliability is quite high. The internal reliability of the second part of the Delphi Survey (determinants or adaptation strategies) has also been tested and the

result was 0.826 (α), which is the desirable value within each section of the weighted determinants.

Thus, those elements, which reached or didn't reach the consensus after three consecutive rounds need to be critically analysed and discussed further in the Chapter Discussion and Analysis in aggregate with the ones, which obtained the consensus during the earlier stages of the Delphi Study.

Chapter 5: Discussion and Analysis

5.1 Introduction

Data analysis in mixed methods research consists of a separate interpretation of the qualitative data using qualitative methods and the quantitative data using quantitative tools. It also engages applying techniques that mix the qualitative data with the quantitative data results – the mixed method analysis (Creswell and Plano Clark, 2011). As previously established, this thesis embarked on the determination and analysis of the factors as actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice. It correlates with the first aim of the research and, therefore, was called Phase 1. The previous chapter provided the findings from the semi-structured interviews conducted among the Scottish and Swiss ski resorts in order to further provide a comparative analysis. With regard to the second aim of the thesis, the outcomes from three consecutive rounds of the Delphi Study have been displayed in the findings as well. The goal of the Delphi questionnaires was to develop a set of sustainability determinants for generic ski resort use. Therefore, there are two purposes of the following chapter. The first purpose is to make sense of the findings from the interviews (Phase 1) and critically assess them by engaging the academic perspectives analysed in the Literature Review section. The second purpose is to interpret the findings from the Delphi Survey (Phase 2). At the final stage the results will be mixed in accordance with the chosen and justified convergent mixed methods design taking into account that qualitative and quantitative data was collected from two independent sources: ski resorts managers for Phase 1 and the Delphi Participants for Phase 2 (Creswell and Plano Clark, 2011).

5.2 Phase 1 (Interviews): Analysis and Coding

Phase 1 had a purpose to reach the first aim of the research and conduct semi-structured interviews in Switzerland and Scotland under the qualitative methodological stance. The first aim to be addressed was:

- To determine and analyse the factors as actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice.

Therefore, the researcher targeted 5 ski resorts in each country and organised face-to-face interviews (in person) among the general managers and operational managers to get a broader perspective from the ones, who were in charge of strategic planning and who experienced the day-to-day operational challenges. As it has been previously stated in the Findings Chapter, during the first phase of the field work 9 interviews were conducted (4 in Scotland and 5 in Switzerland.) The collected data has been transcribed verbatim from the audio recorder and captured in a series of Microsoft Word documents (the transcripts of the interviews are included separately from the thesis). The transcribed data was imported to the NVivo software, which is a tool to organize and analyze the qualitative data (Bryman and Bell, 2007). The transcriptions of the conducted interviews were labelled D1, D2, D3 and D4 for the Scottish ski resorts and Z5, Z6, Z7, Z8 and Z9 for the Swiss ski resorts in random order. The distinction in labelling serves to provide clarity of the ski resorts 'countries of origins.

The next step was to create nodes in the NVivo. The questions of the interviews (Appendix 1) initially were derived from the gaps, debatable issues and problematic spheres discovered in the Literature Review Chapter and were grouped in two themes:

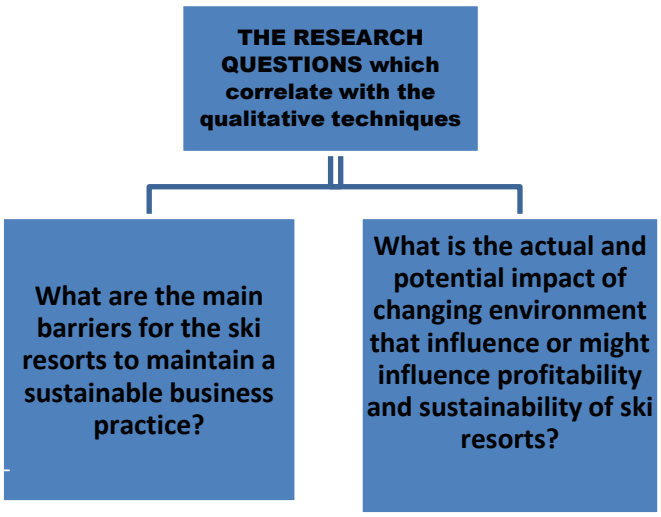


Figure 5-1 Phase 1 – Themes for Interviews

The purpose of both themes and, hence, the interviews' questions was to address the first aim of the research, which correlated with the qualitative technique. In the Methodology section the researcher set and justified the use of the thematic analysis of the data (Chapter 3.7). The thematic analysis allowed the researcher being more flexible and reflective. In addition, it also allowed capturing the richness and in-depth nature of qualitative data of all 9 interviews (Braun and Clarke, 2006).

In order to minimize a bias and increase the validity of the results an inductive thematic analysis has been used which means there was a little predetermined structure of the theme. The prevalent approach was to formulate themes from the data and, as a result, most of the themes emerged from it. Consequently, all 6 stages of the inductive thematic analysis had been followed: analysis familiarization with data, generation of initial codes, searching for themes among codes, reviewing themes, defining and naming themes and producing the final conclusions (Table 3-2). After reading and re-reading the transcribed data in order to become more familiar with it, the certain patterns had been diagnosed for generation of initial codes. The initial codes were based on the researcher's analytical preconceptions and psychological interpretation under the inductive thematic analysis methodology (Braun and Clarke, 2006).

The NVivo nodes (categories) depicted the data and appeared to be divided into two categories: just a few of them from the literature itself and most of them from the interviewees (data-driven themes). The coding process consisted on dragging a thematic phrase, sentences or a paragraph from a source (a respondent's section) and dropping it or them to a specific node section according to a semantic meaning. The figure below visualizes an example of all the Nodes created during the process of coding for every participant.

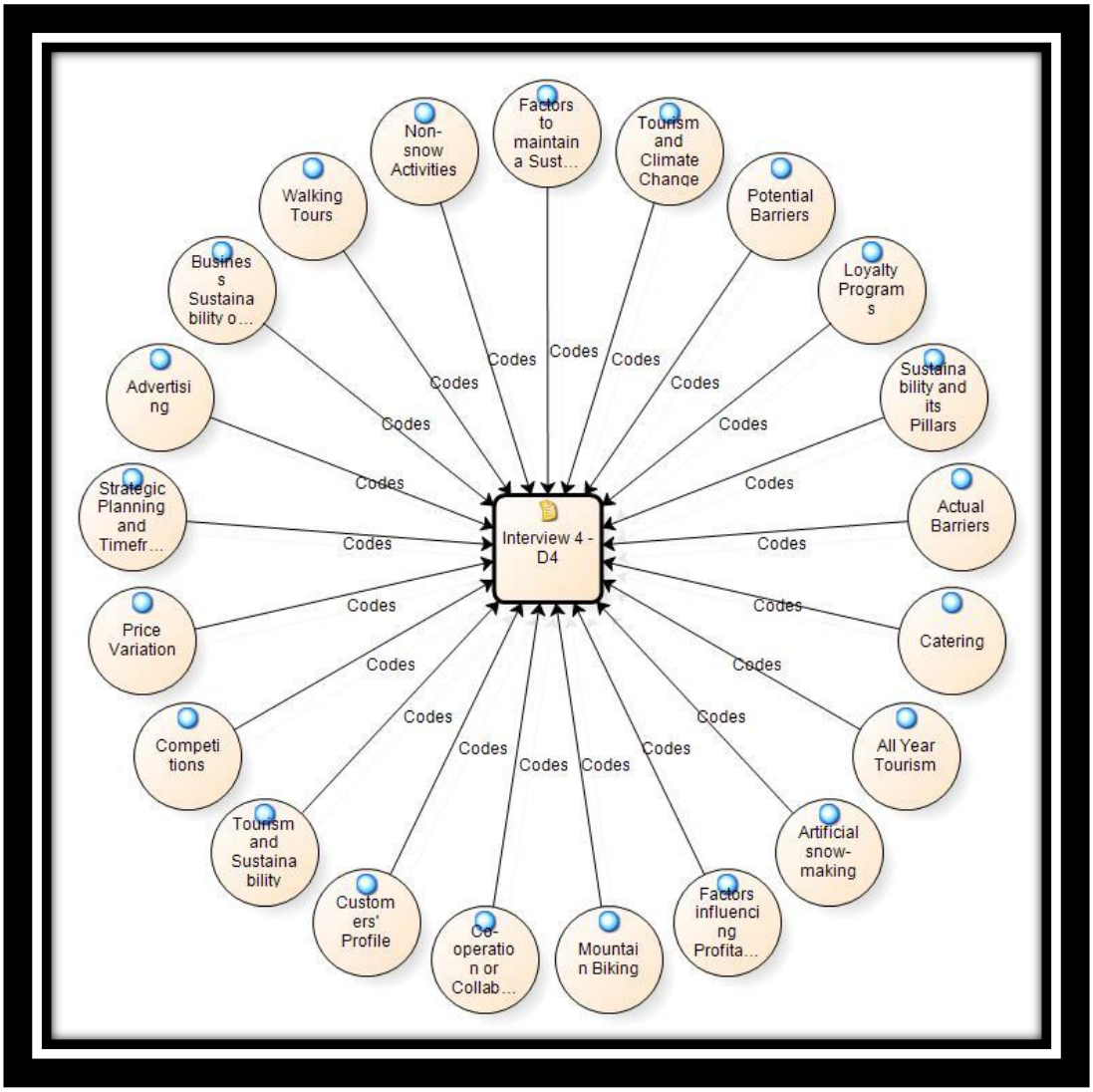


Figure 5-2 Nodes and Coding exported from NVivo

Therefore, according to the Figure 5.2 the following Nodes were formed: tourism and sustainability, sustainability and its pillars, business sustainability or viability, factors influencing profitability and sustainability, factors to maintain a sustainable business practice, strategic planning and timeframe, tourism and climate change, adaptation strategies. These nodes in the NVivo are called the parent nodes (the main categories). The nodes derived from the main categories have a name – children nodes (the figure below).

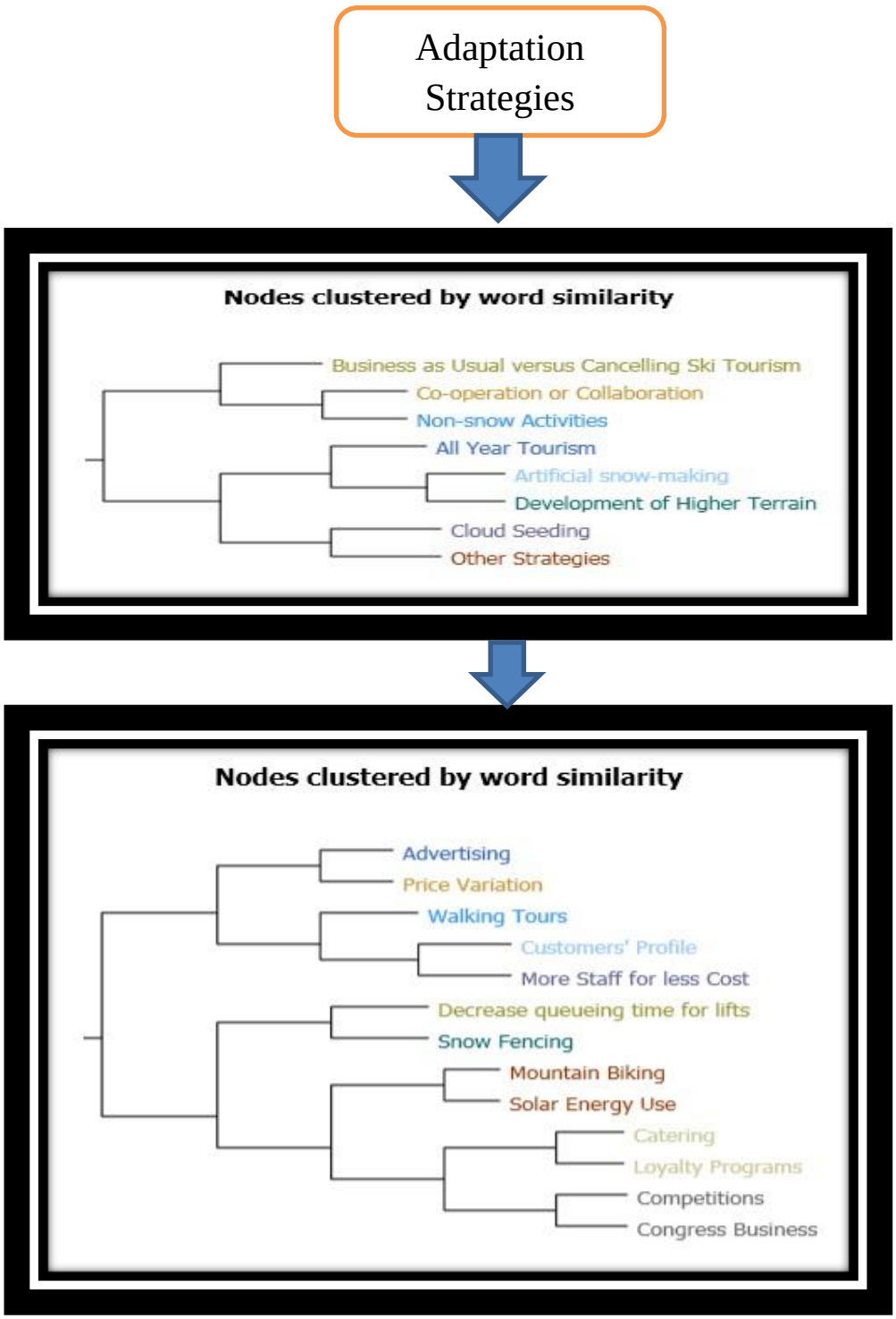


Figure 5-3 Parents Nodes and Children Nodes

Source: NVivo

In this case the children nodes are categorised from the Adaptation Strategies (as the key category), Others (the sub-category) and the children nodes are advertising, catering, competitions, congress business, evaluating customers' profiles, decreasing queuing time for lifts, loyalty programs, more staff for less cost, mountain biking, price variation, snow fencing, solar energy use and walking tours. An essential remark at this point is that all these children nodes occurred from the data itself (from the participants themselves), which reinforces the justified earlier the qualitative data analysis approach - the inductive thematic analysis. Thus, the nodes are the foundations of developing a discussion by connecting the academic literature with the empirical data from the interviews and conducting a thematic analysis.

5.2.1 Tourism and Sustainability

A critical reflection between theory and practice will be demonstrated below. Recent commentaries such as those of Hall (2008a), Scott (2008) and Scott and Becken (2010) demonstrated a rapid increase in the number of publications exploring at least some of the relationships between climate change and tourism, economics' implications and tourism, social connection and tourism in terms of sustainability and viability. The analysis of the CABI Direct database, which has been undertaken by Weaver (2011), revealed that in 128 English-language tourism journal articles published from 1986 to 2009 such relationships had been the dominant topic. Thus, according to Scott and Becken (2010, p. 286) "the awareness phase" has changed and converted into the stage when the scholars were concerned about the resorts and their operation, which had been proven by a higher percentage of academic articles. In line with that, one of the research questions examined whether "the awareness phase" had existed in practice and whether the managers of ski resorts had been concerned about tourism and sustainability.

5.2.1.1 *View on Sustainability*

Most of the Scottish ski resorts' managers have heard about the concept of sustainability, however, their interpretation of it has demonstrated quite the opposite: they only wanted to make sure that they wouldn't rely on snow and would always have enough trade to keep going. In contrast, there was a statement of confidence based on zero evidences, that there would always be a demand for skiing in Scotland. In addition according to the same interviewee's opinion good years would cover the bad ones (D1). It contradicts with the proposition that ski resorts managers nowadays tend to rely on "the axiom that both the tourism industry and, and sustainability, are real-world phenomena (Buckley, 2012, p. 529). D3's delusional perception of sustainability and its connection towards organising competitions raised a serious concern about the whole comprehension of the term. Thus, unfortunately, the perception of some Scottish ski resorts managers is not even close to the acknowledgment and far beyond understanding not only the concept of sustainability, but also the realization of a possible lack of demand in a future. It seems that even the previous years, where their ski resorts struggled to survive, are not a trigger for them to even accept the challenges. With regard to that, it is inadequate and unrealistic approach for any destination to presume that there will be always an increasing demand for its product despite any changes in the tourist market (Liu, 2003) especially considering the fact that ski resorts in Scotland are directly connected to the weather conditions and are winter –based destinations (WTO, 2003; Scott et al. 2006).

An in-depth investigation of the academic literature revealed a lack of a clear definition of sustainability, which might create implications and confusion for any organization (Smith and Sharicz, 2011). "One company may be overhauling its business models to green practice" and that has been confirmed by D4, who claims that not destroying anything around the ski resort means to be sustainable" (Harrison, 1996, p. 71). They also added that it had been impossible to impact on snow, but possible to take care of the air. At least, the concern about the environment, its preservation was present and there was an empirical evidence of the ski resort's attempts to operate based on green principles.

An entirely different approach towards the word "sustainability" has been demonstrated by all Swiss ski resorts except for Z9. As if in unison they all tend to view sustainability in a completely new light and focus on the elements, which the academic literature fails to acknowledge or even deliberately ignores its significance for a ski resort destination. The attempts to look at the concept comprehensively reduce the chances of noticing the specifications of a certain ski resort destination (Gibson, et al. 2005; Gibson, 2006; Pope, 2006; Morrison-Saunders, 2006). A vivid example of the distinguished notion derived from the findings – Swiss ski resorts and their connection to Davos itself, its history and heritage. Sustainability has 150 years of tradition and tradition is linked directly to sustainability. If there was a heritage to be, it should be taken care of and maintaining traditions, image and quality might lead to sustainability. Remarkably, but one researcher always linked Davos and its history (Naumann, 2005). For Davos as a former place, where people came to cure tuberculosis, it is important to carry on its legacy and reinforce another image as a ski resort destination (Z5). Focusing traditionally on a slow mountain was their competitive advantage and key element of sustainability for that specific ski resort (Z8). Regarding the vital role of traditions one Scottish ski resort manager willingly shared the details of their 50 years anniversary of skiing (D4). In addition, the so-called formula sustainability equals traditions has received a development in terms of price. Switzerland is a small country and it is an expensive country. It is by the definition of tradition stands for high values and high values - high price and sustainability has a price too. Z5, Z6 and Z7 emphasized strongly on the sustainability and the price. They agreed on keeping the price no matter what external or internal conditions might dictate in order not to destroy an image of Swiss high quality, which offered a great ski product for very expensive price. The extra values might be added on the top but reducing the price was never acceptable.

A table below provides a summary of the main issues derived from the academic literature and opinions discovered during the interviews about tourism and sustainability in order to provide a clear understanding of the own results vs the discussion in the literature.

Table 5-1 Literature vs Own Results (View on Sustainability)

Literature	Own Results from Interviews
Ski resorts managers tend to rely on "the axiom that both the tourism industry and, and sustainability, are real-world phenomena **(Buckley, 2012, p. 529)** **Hall (2008a), Scott (2008) and Scott and Becken (2010), Weaver (2011)** – direct connection with climate change and tourism; Ski resorts in Scotland are directly connected to the weather conditions and are winter – based destinations **(WTO, 2003; Scott et al. 2006)**; **Scott and Becken (2010, p. 286)** "the awareness phase" has changed; It is inadequate and unrealistic approach to presume that there will be always an increasing demand for its product despite any changes in the tourist market **(Liu, 2003)**	**Most of the Scottish ski resorts' managers (D2, D3, D4)** have heard about the concept of sustainability: • they only wanted to make sure that they wouldn't rely on snow; • would always have enough trade to keep going; • unrealistic view - there would always be a demand for skiing in Scotland; • good years would cover the bad ones **(D1);** • failed to realization of a possible lack of demand in a future; • delusional perception of sustainability and its connection towards organising competitions **(D3).**
Lack of a clear definition of sustainability, hence, implications and confusion for any organization **(Smith and Sharicz, 2011).** "one company may be overhauling its business models to green practice" **(Harrison, 1996, p. 71).**	To be sustainable means "not destroying anything around the ski resort" **(D4).** It is impossible to impact on snow, but possible to take care of the air **(D4, D2).**
The attempts to look at the concept comprehensively reduce the chances of noticing the specifications of a certain ski resort destination **(Gibson, et al. 2005; Gibson, 2006; Pope, 2006; Morrison-Saunders, 2006)**;	**All Swiss ski resorts except for Z9:** • view sustainability in a completely new light and • focus on the elements (unlike the academic literature).

Davos and its history are linked **(Naumann, 2005).**	Sustainability is connected to history and heritage (150 years of traditions in Davos); • carrying on its legacy and reinforce another image as a ski resort destination **(Z5)** • focusing traditionally on a slow mountain **(Z8).** • the so-called formula sustainability equals traditions. High values - high price and sustainability has a price too **(Z5, Z6 and Z7).**

Thus, Swiss ski resorts are not oriented towards the masses and traditions for them equal sustainability for Davos ski resorts. In addition, "the concept of the cheapest" is not the concept of the sustainability for Swiss ski resorts (Z5, Z6, Z7, Z8) with one deviated opinion expressed by Z9 with a possibility to reduce a price if situation gets very challenging. Z9's point of view corresponds with a more holistic approach that needs to be implemented in the forms of adaptation strategies as measures for diversification and resistance to a rapidly changing environment (Dawson and Scott, 2010).

Noteworthy, a definition of sustainability should not be addressed without exploring the foundation of the concept of sustainable development and its gist. However, other participants looked at the concept of sustainability from the angle of its elements without naming them sometimes or even defining the word "sustainability", which will be examined below.

5.2.1.2 *Pillars of Sustainability*

Liu (2003, p. 460) encourages to finish "a sematic debate about terminology" and focus on "sustainability trinity" (Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007) or "three legs of sustainability" (UNWTO, 2004; Newport, et al. 2003, p. 357), or in another words - three-dimensional triple bottom-line of sustainability (Smith and Sharicz 2011). There are two debatable

issues here. The first one is concerned with an additional forth pillar of sustainability. Davos Declaration about climate change and tourism proposed and confirmed a "quadruple bottom line" of sustainability: the environmental, social, economic and climatic component encouraging the policy makers to ardently adopt suitable policies that reflect the components (Davos Declaration, 2007, p. 2). It is arguable though that a climatic component should be separate and not a part of environmental segment because theoretically climatic component could be considered as an aspect and a part of the environmental one. However, Davos Declaration has distinguished those two elements. The second debatable question deals with an equal or unequal treatment of all the components of sustainability. Hunter (1997) states that a balanced approach to three-dimensional triple bottom-line of sustainability with its economic, social and environmental elements is not realistic and all pillars have to be treated differently. Before the data collection the researcher took into account both notions; however, in practice it seemed that for one destination an influence of one of the TBL components had been more significant, for instance, a dependability of a resort from the weather (especially Scottish ski resorts), for another - the economic element had been worth a major consideration due to the strength of Swiss Frank and a larger percentage of foreign customers (mostly for Swiss ski resorts). Hence, due to the nature of a ski resort, its agenda and external factors the balanced approach is a challenge to maintain. Nevertheless, during the interviews in Switzerland and Scotland all elements were equally treated despite the predominance of one over another.

Thus, the conducted interviews revealed the following: D1, D3, recognized only one of the pillars of sustainability (the environmental pillar). In addition D4 actually linked the concept of sustainability with a social corporate responsibility without determining and developing further the concept itself. Z9, however, did not attempt to define the term itself like Liu suggested (2003) and started to explain the aspects of sustainability, which in fact, had been just mentioned rather than clarified. Unfortunately, it revealed a poor understanding of the concept from the beginning of the interview. Nevertheless, the same manager pointed out that all three aspects of sustainability should be treated in harmony, but instead of an economic pillar she

called it "a financial one". Straight after the expressed earlier statement Z9 contradicted herself by adding that the environmental component is the most important, which is an example of her uncertainty and, as a matter of fact, the unequal treatment of the elements (Hunter, 1997).

The social element of the "sustainability trinity" (Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007) appeared to be of high significance. A duty and expectations from the locals to preserve the mountain was among the main priorities of the ski resort. Local inhabitants played the key role not only because most of them had been recruited by the ski resort (D3, Z9), but also because there was an organic connection between people and skiing (D4). The empirical data reinforced the role of the local people, who lived in the area and were involved not only in the operation of the ski resorts, but also in monitoring their concern about environment and income to a local budget (Meier and Wille, 2011). In line with that D3 admitted that local staff had been more reliable and they lived near the area, whereas, hiring someone from the outside the community required providing an accommodation, which was lacking.

A table below provides a summary of the main issues derived from the academic literature and opinions discovered during the interviews about pillars of sustainability in order to provide a clear understanding of the own results vs the discussion in the literature.

Table 5-2 Literature vs Own Results about Pillars

Literature	Own Results from Interviews
To focus on "sustainability trinity"**(Harrison 1996; Farrell 1999; Liu, 2003; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007)** or "three legs of sustainability" **(UNWTO, 2004; Newport, et al. 2003, p. 357),**	In practice for one destination an influence of one of the TBL is more important, for another - less: • dependability from the weather **(especially Scottish ski resorts);** • economic element - the strength of

or three-dimensional triple bottom-line of sustainability **(Smith and Sharicz 2011).** **Hunter (1997)** – the balanced approach to TBL is not realistic and all pillars have to be treated differently.	Swiss Frank and a larger percentage of foreign customers **(mostly for Swiss ski resorts).** In practice the balanced approach is a challenge to maintain (according to all Scottish and Swiss ski resorts): • recognized only the environmental pillar **(D1, D3);** • linked the concept of sustainability with a social corporate responsibility without determining and developing further the concept itself **(D4);** • did not acknowledge TBL, but developed a discussion about the economic component and called it "financial one" **(Z9).**
The social element of the "sustainability trinity" **(Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007)**. Local people's concern about environment and income to a local budget **(Meier and Wille, 2011).**	In practice it appeared to be very important: • local inhabitants are recruited by the ski resorts **(D3, Z9)** because the local staff is more reliable and doesn't need an accommodation **(D3);** • there is an organic connection between people and skiing **(D4 and all Swiss ski resorts);** • duty and expectations from the locals to preserve the mountain **(Scottish ski resorts).**

Most of the interviewees tend to interpret the political component as a need of a Government to support ski resorts, for instance, D3 confessed that they had received little support and still needed to attract customers against all odds. It had been decided to launch a trial with snow guns and, in fact, the trial succeeded. Sadly, their further exploitation was impossible without the Government funding. It proves that a suitable Government's support is missing, but the pressure to attract more tourists for

the area was present (Phillips, 2012). In contrast, Swiss ski resorts were eagerly supported by the Government especially during the World Economic Forum in Davos, Spengler Cup and summer activities sponsored by the local authorities in the favour of children support and other festivals (the details will be discussed in the section of adaptation strategies).

5.2.1.3 *Business Sustainability or Viability*

Business sustainability was the source of an endless debate and a search of a consensus in the Literature Review section because in most of the cases the academic literature was limited to the angle of external sustainability, perceptions of visitors towards sustainability of ski resorts ignoring completely developing a discussion and conducting a field work towards the internal sustainability, which the researcher defines as the inner (business) sustainability or viability for ski resorts to survive in a long run. The researcher of the current thesis shifted a traditional focus towards the ski resorts primarily and conducted the interviews from that precise perspective including, of course, what was topical and up to date in the literature, the issues related to the outside sustainability but much less than challenges connected to a business sustainability and viability of a particular ski resort in order to fill a gap in the empirical studies and academic research.

Only a few authors try to distinguish sustainability (McCrum, et al., 2009). The whole concept seems like a "muddy pool" without a proper clarification. Sustainability is defined variously - "one company may be overhauling its business models to green practice; another interprets a sustainable business as a company that will survive next ten years" (Harrison, 1996, p. 71). The researcher supported those academics who had urged to divide sustainability as an outer (external) sustainability and inner (internal, business) sustainability (Figure 2-3; Figure 4-1). Bullough (p. 46, 2011), operates with the sentence "…facilities will be developed with emphasis on the future sustainability and viability of the individual businesses rather than economic benefit of the wider area". The findings uncovered a clear separation of the terms by all ski resorts managers, for instance, when they talked about ski resorts

operation based on green principles (this is about an external sustainability) and when the strategies should be applied in order to make enough money to keep them solid for the whole year (it is about business internal sustainability). It is logical to presume, that for the ski resorts, survival is connected to its business sustainability and viability and is the first priority. Another respondent indirectly addressed this issue by answering another question with regard to a snow deficiency. The response was quick that they would close the ski resort because they were not like in a continent with a thousand meters and nice climate and not many people would want their leisure to be walking, hence, the result would be to shut their ski resort. In this case continuation would not be sustainable businesswise (D1). Therefore, the respondent implied business sustainability while sharing the worst-case scenario for the business.

Overall, all ski resorts managers talked about business sustainability while addressing the questions related to the barriers of profitability and adaptation strategies to be implemented. In the literature Müller (et al. 2010, p. 28) operate with the term 'rejuvenation strategies" to prolong a winter destination life cycle by analyzing a competitive environment with all its obstacles. What the authors call business rejuvenation in this thesis is named as business sustainability in the form of its viability due to their identical meanings. In addition, Bullough (p. 41, 2011) noted that 'there is a need to secure a sustainable business model in ski resorts' which will benefit ski resorts' viability in a long run. Scott (et. al 2012, p. 191) use directly the term "business sustainability" during a discussion about climate change and its consequences for the destinations, implications for touristic activities there and the capacity of ski business to exist and survive. However, for this research a debate about components matters only to an extent of clear vision that sustainability in general might be interpreted as an outer (external) sustainability and inner (internal) sustainability. To identify their interconnections, objective and subjective factors influencing sustainability was one of the objectives and challenges of this research.

A table below provides a summary of the main issues derived from the academic literature and opinions discovered during the interviews about business sustainability

in order to provide a clear understanding of the own results vs the discussion in the literature.

Table 5-3 Literature vs Own Results about Business Sustainability

Literature	Own Results from Interviews
The whole concept is a "muddy pool" without a proper clarification **(Harrison, 1996, p. 71).** Sustainability is viewed only as the external (outer) sustainability **(**Tyrrell and Johnston, 2007; **Sharpley, 2009; Smith and Sharicz 2011).** The term is "poorly defined" **(Butler, 1996, p. 11).**	The findings uncovered a clear separation of the external sustainability from the internal business sustainability **(Figure 4-2)** by **all ski resorts managers**. With regard to the external sustainability: • "harmony of all components" **(Z9);** • "operating based on Green Principles, duty to preserve mountain" **(D4);** • "organic connection between people and skiing, people and environment" **(D3);** • "sustainability means a resort with huge traditions" **(D4, Z9);** • "concept of the cheapest is not the concept of sustainability" **(Z5, Z6, Z7).**
Only a few authors try to distinguish sustainability: • **McCrum (et al., 2009) -** an academic literature in most cases ignores a perspective of ski resorts managers; • **Bullough (p. 46, 2011) -** "…facilities will be developed with emphasis on the future sustainability and viability of the individual businesses rather than economic benefit of the wider area"; • **Scott (et. al 2012, p. 191)** use directly the term "business sustainability" during a discussion about climate change and its consequences for the destinations, implications for touristic activities there and the capacity of ski business to exist and survive.	In practice *the internal business sustainability* **(Figure 4-2)** was clearly separated, defined and interpreted as: • "sustainability in terms of our operation" - Business Sustainability **(D4);** • "having enough trade to keep going" **(D1);** • "organising competition to survive" **(D3);** • "Sustainability equals 50 years of traditions" **(Z5, Z8);** • "High Values=High Price, hence, sustainability has a price" – business sustainability **(Z5, Z6, Z7).**

5.2.1.4 *Strategic Planning and Timeframe*

The previous section investigated different positions of ski resorts in Scotland and in Switzerland in terms of sustainability, its pillars and linked the academic literature to this particular matter. Despite the differences, a consensus was reached that economic, political, environmental or social forces had influenced business sustainability and viability of ski resorts.

The degree of its impact distinguishes significantly and subjectively depending on a specific ski resorts' need. In line with that some academic studies showed a lack of adaptability as a gap in common strategic planning for coping with the implications caused by the economic, political, environmental and social forces (Scott, et al. 2006; Scott and McBoyle, 2007 Mirfenderesk and Corkill, 2009). The findings, in fact, have vividly demonstrated and reinforced that gap; for instance, some managers were almost ready to give up facing the same challenges every year and refusing to even develop a plan or a strategy to eliminate them. Some of them accused the Scottish weather and its unpredictability as the main reason preventing them from planning ahead, albeit that should be exactly the trigger and incentive to create alternative solutions, contingency plans or adaptation strategies (D1, D2, D3). The events are planned in advance (5 years plan), which according to their words was planning, but "more hope than knowing for sure" (D3). On the one hand, making a forecast of complications is difficult in the countries, where the weather conditions are linked inseparably to the business itself (Wittneben and Kiyar 2009). On the other hand, the action is needed even more with the challenges ahead (Kokkranikal, et al. 2003; Patterson, et al. 2006; Frochot and Kreziak 2008; Filho 2009). An incapability to take proactive actions for the long term growth might lead towards a loss of financial stability and internal sustainability of a ski resort (Vanat, 2014), which is exactly the case among Scottish ski resorts. It could be concluded that Scottish ski resorts had demonstrated their passive behaviour and lack of adaptability towards every day changing environment and their words had quite frequently contradicted their actions. Regrettably, they have admitted that repercussion of not planning ahead lead

to an inevitable revenue loss but they still “chant their mantras and sit in their caves” and don’t behave proactively (Watson, 2001, p. 386).

An entirely different approach has been taken by Swiss ski resorts managers: not only they are successfully involved in planning, but they are actively and enthusiastically involved in it. They are engaged in making deals until the year 2021. Their justification of such a long term planning is to overcome any future economic, political, environmental obstacles by arranging the deals in advance. According to them, the events make ski resorts’ business sustainable and if, for instance, Swiss Frank strengthens next year or the year after, regardless of that economic implication, their arrangements or contracts will remain the same with the price fixed at the particular year (Z7, Z8). Only one Swiss ski resort develops the plan for 5 years, but it could be easily explained by the established fact that all other four are under the same ownership and, hence, the strategic plan (until 2021) had been elaborated for everyone to be compulsory implemented. The researcher suggests an assumption – strategic planning might lead to sustainable business practice. The next section aims to delve into it.

5.2.2 Barriers of Profitability and Sustainability

One of the aims of this research is to determine actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice. During the interviews the researcher was investigating actual and potential impact of changing environment that influenced and might influence profitability, business sustainability and viability of Switzerland and Scotland as the ski resort destinations. The actual barriers and potential barriers are very connected and actually are entwined with each other because most of them have a repetitive sign. Due to their tendency to repeat ski resorts could think of the strategies to overcome and reinforce their sustainable business practices.

In the literature there is a diversity of factors that influence or might influence profitability and sustainability of ski resorts. Under the concept of sustainability with

its QBL an economic, environmental and socio-political elements are significant for business to survive in a long run (Vanat, 2014). Scott (et al. 2006) strongly emphasize that an evaluation of implications caused by an external environment (TBL of external sustainability) has to be given a high priority in terms of competitiveness and profitability (one of the aims of the current thesis) of ski resorts. As it has been previously referred to all components were equally considered and treated in this thesis especially on the stage of the qualitative data collection avoiding a predominant influence one over another. The interviewees were asked to identify the actual challenges that had an impact on ski resorts profitability and sustainability and to try to predict any potential barriers based on the previous years' implications. Concerning this research three years period has been intentionally chosen to detect challenges of the ski industries in Switzerland and Scotland evaluating the peak winter season with the worst one. Silverman (2010, p. 389) highlights that one of the advantages of qualitative methodology is working with "naturally occurring data" meaning that during the field work the researcher was asking participants about what actually happened in winter season over the past three years (the facts and events) rather than what they thought happened. Z5 provided a brief summary of the continuous overall decline (comparing different years) initiated by the economic barriers for all Swiss ski resorts of Davos including the exchange rate. He also added that up until 2013 (the year of the conducted field work), there had been a decline in all ski resorts in Davos, Switzerland. According to the empirical data in 2008 and 2009 the bank crisis struck and afterwards the world economic crisis influenced negatively the ski industry followed by the currency crisis. Hence, three years ski resorts in Davos faced the economic crisis, which consequently, did affect the tourism industry.

5.2.2.1 *Climate Related Barriers*

Another challenge that requires to be addressed is climate change. In relation to the ski resorts of Scotland this issue is a reality and there is a potential menace for skiing in Scotland to be 'climatically marginal' activity (Howie, 2003). The empirical data has also shown that. Mountain areas are sensitive to any changes of the weather.

Implications of that might be, for instance, less snow, too much snow, receding glaciers, melting permafrost (the permanent solid layers of ice) and landslides. A climatic component is only one of many prerequisites influencing snow tourism in particular ski resorts, as the snowline recedes (Cooper et. al, 1998; Pozzi, 2011). In this regards, D1, D2, D3, D4, Z5, Z6, Z7, Z8, Z9 in unison confirmed seasonality to be the actual and potential barrier of sustainability. With regard to seasonality for all ski resorts snow played a role because they were all the winter sports destinations. The insufficient snow covering is the undeniably serious factor of profitability and sustainable business practice (Bürki et. al, 2003; Bürki et. al, 2005; Surugiu et. al, 2010b). However, the complexity of barriers has been recognized by some of the respondents, but with a different scale of importance (D4, Z9), for instance, some identified 'snow' as the definite barrier (D1, D2, D3, D4, Z9), one also mentioned 'a strong wind" (D1, D3), another, above all – rain (D1).

Thereby, Scottish ski resorts face, due to their climate specification, also wind and rain as other significant challenges to overcome and in fact, they need to be addressed and are being addressed with a deceptive success (sub-chapter 5.2.3). Strong wind by nature blows away the snow cover. To fight that force of nature ski resorts in Scotland need a snow fencing to accumulate the snow and they actually are doing that in practice. Moreover, without a suitable amount of snow profitable ski tourism will barely be possible. "Mountains without snow are like summer without sea" (Bürki, et. al, 2003, p.1). This statement might represent the truth; however, a supposition could be made - ski resorts might become sustainable if they are flexible enough to apply adaptation strategies. An ultimate outcome of that would be a re-shape of the ski resorts destinations to all year tourism. Unfortunately, some resorts in Scotland stay closed, when there is no snow (D2) without even trying to at least open the main hill if a situation changes (like D4) just for a few hours, hence, there is a minimum intent to be adaptable.

In contrast, the respondent Z5 said that the lack of snow was not a crucial factor because of a special natural ice ring for events, which suffered due to a huge amount of snow. Even though the climate change could be sensed, but they applied

successfully an artificial snow as a guarantee of stability for skiers and all year round strategy of Swiss ski resorts. For Scottish ski resorts the scarcity of financial resources is a huge demotivation, whereas Swiss ones possess an obvious advantage but still strive to survive. The artificial snow is crucial in double measure in order to guarantee a season start in the end of November unlike in Scotland. Z5 and Z6 both confirmed the importance of snow especially for the beginning of the ski season. A peculiar interpretation was given towards the unity of snow and sustainability. Z8 stated that nobody would forecast; whether it is lack of snow or too much snow and this statement was already sustainable. People's unawareness or presumption with regard to the weather is sustainable, which required, without any doubt, to apply adaptation strategies to stabilize the winter season (Z5, Z8). The academic literature suggests to show resilience rather than sensitivity to climate change, ski resorts should implement adaptation strategies (Bicknell and McManus, 2006; Scott, 2006; Del Matto, 2007; Pozzi, 2011), which is in reality poorly done especially by some Scottish ski resorts.

5.2.2.2 *Exchange Rate*

Another barrier of sustainability recognised by all the interviewees was an exchange rate (Scott, 2006). However, the Scottish ski resorts (D1, D2, D3, D4) being predominantly dependant on the local customers, but not the foreigners were concerned about the exchange rate, logically and understandably, less because they only had to deal with the British Pound Sterling. D4 also confessed that they did not monitor customers' profiles very well with the precise figures. D2 confirmed that they had captured customers' names when they rent equipment in order to provide them with something extra sometimes. D3 clarified or justified apologetically the absence of tracking systems that the loyal customers she had known by their faces because of 10 years of work there, but not the names. Comparing with the Scottish ski resorts (D1, D2, D3, D4) an entirely diverse attitude towards the exchange rate barrier has been expressed by all Swiss ski resorts regardless of the local customers' orientation (Z5, Z6, Z7, Z8, Z9) and they all confirmed the strength of Swiss Franc over another currency, which had two-sided affect. They lost UK and German markets but faced a danger to lose Swiss market. Thus, not only the exchange rate

demotivated and, as a result, prevented foreign tourists to come skiing to Swiss ski resort, but also drove away Swiss customers to spend their holidays abroad due to the cheap prices caused by the other currencies' fluctuation. This is a vivid example of when a barrier for one destination turns to an opportunity to grasp for another. Swiss skiers with the currency rate preferred to travel to cheaper places like Austria, Italy and France, which suddenly and unpredictably became strong competitors for Swiss ski resorts (Bullough, 2011).

5.2.2.3 *Competition and Lack of Cooperation*

A next barrier of sustainability indicated by the ski resort managers was competition. The crucial issue connected to competition is collaboration even with competitors for mutual benefits (Del Matto, 2007; König and Abegg, 1997; Thorne, 2006; Scott and McBoyle, 2007), which is in practice, poorly done. D1, D2, for instance, claim that despite the fact that they all compete with each other due to the proximity of their geographical location, they try to collaborate and help each other with spare cabs, when anyone is stuck elsewhere. From the researcher's perspective, sparing cabs does not seem to be enough for collaboration and support. D3 contrarily admitted that all ski resorts in Scotland stayed in touch, but this was it in terms of assisting one another, because in the end of the day they were all direct competitors. It shows a limited interpretation and implementation of the strategy to collaborate in Scotland. With regard to ski resorts of Switzerland the main competition is not between Davos and St. Moritz, St. Moritz and Davos, and the Austrian ski resorts. The main competition is the Mediterranean Sea and the mountains. That is the basic decision people do take especially in winter times, when they decide – do we want to spend holidays in the mountains or do we fly for 300 euros to Turkey including flights, 4 stars hotel for 7 days and only for 300 euros. The key issue, which is often not given enough attention, is a competition of winter destinations and summer destination. According to Z6, the moment when people preferred to enjoy the sun, ski resorts lost the customers and therefore, the biggest challenge in terms of competition was to keep people interested in winter sport.

5.2.2.4 *Health System Change*

In addition to aforesaid, some interviewees listed a few other barriers like the health system change, which impacted on the decline of visitors (in these case patients of Davos), who used to not only receive a medical treatment there, but also spent their spare time in the ski resorts if health allowed. Thus, ski resorts of Davos were the recreational centres for the patients. The current health system implemented by the Swiss Government sends people to different places and above all, people tend to re-shape their perception by thinking that illness and holidays are entirely different things (Z8). Unfortunately, in Davos there are only three clinics left comparing, for instance, to 37 in 1920.

5.2.2.5 *Lack of Tracking System*

D2 confirmed that they had captured customers' names when they rent equipment in order to provide them something extra from time to another. D3 clarified or justified apologetically the absence of tracking systems that the loyal customers she had known by their faces because of 10 years of work there, but not the names. In Switzerland the tracking system does not also exists. Z6 also noted that hotels within the area had tried to detect their customers, but the ski resorts obtained only the information about numbers but not personal details. Therefore, a lack of the tracking system was recognized to be a barrier of sustainability. An important remark has to be provided at this point that according to Z5 there are six ski resorts here and five of them (Z5, Z6, Z7, Z8 and Z9) are run by one company. Z6 confirmed that there had not been any tracking system among all 5 evaluated Swiss ski resorts in Davos (except for one, which was excluded from the field work of the current research).

5.2.2.6 *Lack of Government Programs*

Another barrier - the official closing of the Government programs to support skiing among children, which used to be compulsory in Switzerland (Z5, Z6, Z7, Z8). In addition, the cultural diversification played a negative role for skiing. In every school

a proportion of local Swiss kids decreased and the foreign children, who were not originally Swiss, unfortunately, did not share the same passion for winter sports. As Z5 stated, skiing had been in Swiss DNA, therefore, the decline of young people had continuously progressed due to the described reasons. The same opinion but with the slightly different angle shared the Scottish ski resorts. D1 and D4 highlighted a need to use incentives with the Government support for children to ski more in Scotland (Phillips, 2012).

5.2.2.7 *Ski Season Length*

The actual barriers has a direct effect on the actual length of a ski season, for instance, in 2012 some of the ski resorts in Scotland have started their season in the 16th of December and it was all finished in the 19th of February. They would normally expect to ski until the end of March, but regrettably, they did not even reach the end of February (D1; D2; D3). Only one ski resort (D4) managed to remain open until April and accumulated an income without a significant loss. It could be explained by a few obvious advantages that D4 possesses over others, like – higher altitude (Tsuyuzaki, 1994; Hudson, 1996; Bürki, et. al, 2003; Hudson, 2006; Herremans, 2006 Surugiu et. al, 2010; Bullough, 2011) and a successful implementation of some adaptation strategies especially towards alternative solutions to attract non-skiers (Elsasser and Bürki, 2002; Tommasini, 2003; Bicknell and McManus, 2006; Scott, 2006; Del Matto, 2007; König and Abegg, 1997; Thorne, 2006; Faullant, et al. 2008; Markandya and Chiabai, 2009; Pozzi, 2011; Pickering and Barros, 2013; Skiing, 2014;). All participants agreed 100% (D1, D2, D3, D4 and Z5, Z6, Z7, Z8 and Z9) that there are ways to overcome the indicated barriers in the forms of strategies, but demonstrated different approaches, which will be discussed and critically assessed below.

5.2.3 Adaptation Strategies

As it has been established earlier in this thesis in terms of the ontological position, Ritchie and Lewis (2005, p. 22) state that "ontology is concerned with the nature of

the social world and what can be known about it". There was in fact "… an external reality which existed independently of people's beliefs or understanding about." The external reality in this research was natural forces like climate change, which had dictated its own conditions for ski resorts to adapt, to change a strategic planning, apply different innovative ideas or simply just function as it was. In line with that all the interviewees have confirmed that climate change and all its related aspects was in fact that external force of reality, the barrier of business sustainability that needed to be addressed. However, some of the ski resorts' managers acknowledged the climate change as a threat, but did not demonstrate a full comprehension of its consequences.

Some of the ski resorts have demonstrated an absolute oblivion towards the definition of adaptation and adaptation strategies. The academic literature states that the adaptation could be defined as actions need to be taken in order to reduce, moderate, and adjust to the potential or actual negative effects of climate change (Markandya and Chiabai, 2009). The analysis of the findings revealed a paradox in the response by stating that the ski resort is not busy enough and, that is why they don't apply any strategies. It seems not logical to justify a lack of strategies by the statement about how busy the ski resort is. The response has indicated a lack of a clear notion with regard to when the strategies are needed: with lots of customers on the premises or during the period of ski resorts business hiatus. Besides, in order to plan anything, ski resorts need to know if it is going to be snow, which reinforced the position that ski resorts were not aware of when adaptation strategies were needed. The link of a false connection of snow and events in the mind of D2, D3 was evident. They presumed that the adaptation strategies were necessary exactly when there was enough snow to ski, but it was quite the contrary. Above all, the impossibility to predict the snow, strong wind, or rain was not a barrier or restrain from planning. It could be agreed that events related to the snow had not been easy to plan but even after another question it became clear that the interviewees had been far beyond understanding the adaptation strategies' time frame of creation and implementation.

A critical assessment of the empirical research at that stage uncovered that knowledge or perception of climate change implications did concern ski resorts, but

the concern had been limited towards the realization of the challenges only without offering adaptation strategies (Pickering and Morrison, 2013). Hence, summarizing the points of view of D2 and D3– if they were unable to forecast the snow, how they could plan any strategies and why they should pursue them, which contradicts entirely with the academic literature. Some authors (Scott and McBoyle, 2007; Scott, 2011) insist on developing and implementing of adaptation strategies assessing first supply- and demand-side adaptation that might change the projected impacts. The findings reveal that ski resorts don't have a clear idea about supply and demand sides of the adaptation to the external forces. Moreover, D2, D3 did not even express a need of action with a snow scarcity, not to mention the realization of a need to act immediately and aggressively from the side of ski resorts managers to sustain their business (Becken and Hay 2007), which is quite a disappointing passive position. Thus, with that passive attitude the ski resorts would be jeopardized (Luthe and Schläpfer, 2011).

5.2.3.1 *Artificial Snow-making*

The conducted interviews in Scotland and Switzerland aimed to investigate (along with the other set objectives) what would happen if ski resorts "had to rely on snow from the heavens?" Would they the ski industry be bankrupt (MacDonald, 1988, cited in Scott, et al. 2006, p. 378)? The interview data in Australia, analysed in the Literature Review section revealed that managers of four ski resorts there had acknowledged that snowmaking was an important strategy. However, it required "the mammoth amount of energy", therefore, snowmaking is "a double-edged sword" (Morrison and Pickering, 2013, p. 182). The empirical data of this research was different due to the various amounts of financial resources available for the ski resorts in Scotland and Switzerland to use an artificial snow. Taking further the idea of snowmaking as the "double-edged sword", that adaptation strategy to sustain the ski resorts business has both advantages and disadvantages. For Scotland it was not a solution even though they applied it seldom and in a small amount. 98% of the snow was natural and it was not possible to use an artificial snow if visually it could be seen that the weather was warm and damp (D3). Snowmaking works well in a dry

continental climate and ski resorts here are in relatively mild climate and they don't normally lack of precipitation in Scotland. Snowmaking is all about to induce precipitation, so it is not a solution (all Scottish ski resorts). Therefore, it is not a lot they can do to negate a snowless weather. One of the most suitable ways is to be able to react to any level of snow from a very small winter to large winter. Thus, the interpretation might be that not the snowmaking itself is the adaptation strategy, but the preparedness, speed and eagerness to react and adapt towards the weather because the key objective is to make the best of a good winter and also to be able to run at a very low cost (D1; D2; D3).

Another obstacle despite the parameters for snowmaking resort (Scott, et al. 2006) is a need of powerful water supplies, which was the constraining factor according to the interviews data (D2, D3, D4) during a trial with a snow gun machine. In addition, every time Scottish ski resorts tried it on, it started snowing again. Without a government support and essential funding even successful trials of snow gun machine, not to mention the snowmaking itself, will be ineffective.

According to the ski resorts in Switzerland snowmaking is a solution to keep a demand up and ski resorts running. Most of the ski resort is Switzerland tend to use an estimate of 30% of a technical snow (Z6, Z8, Z9) - if you lose snow in a specific point in a ski resort, the whole ski resort collapses. If at one point snow goes away, Swiss ski resorts won't be able to bring people to the peak or people won't come back because the snow has melted. Snow production guarantees that the ski resorts can operate the whole season (but mostly the main lifts area), which could be a way to reach a concept of "skiing fix" any month of the year that has been successfully implemented in Dubai (GRASSO, 2014), but requires more financial resources. Snow production in Switzerland also guarantees a specific date for the season start without a delay, which is sustainable both for the customers and for the business.

The demonstrated analysis has indicated that different capacities and possibilities of Scottish and Swiss ski resorts predetermine successful or unsuccessful realization of adaptation strategies, like snowmaking (Scott, et al. 2006). Thus, it is agreed that

despite the fact that snow making is the effective strategy, nevertheless, it has implications like high operating costs and large amount of water to be required hence, an increase of energy demand (Scott, 2006; Scott and McBoyle, 2007).

5.2.3.2 *Co-operation (Collaboration) and Marketing*

All ski resorts in Scotland stated that they did cooperate with each other, but when they were asked to specify how, the replies had been confusing. One manager shared that they had helped each other out with spare cabs when anyone was stuck elsewhere, nevertheless, that was it taking into an account that other ski resorts were competitors (D1) with the polarized views (Morrison and Pickering, 2013). Another one was addressing the issue by deviating from the question of collaboration between the ski resorts towards the co-operation with inhabitants (hiring mostly locals) and with the marketing teams. When opportunities appear, skiers work together to integrate with VisitScotland and SkiScotland. Moreover, marketing people come to the ski resorts often and inform the hotels' customers about the upcoming events. However, hotels around the area don't sell tickets for skiing or for the events, which seemed quite peculiar considering that unlike other Scottish ski resorts with almost no accommodation around due to their remoteness (D1, D2, D3), D4's location has an obvious competitive advantage with lots of hotels around. It is surprising to realize, that the collaboration with the nearby hotels does not take place, which resonates with the common literature about the need to collaborate and actual collaboration (König and Abegg, 1997; Thorne, 2006; Scott and McBoyle, 2007; Scott, 2008; Faullant, et al. 2008; Markandya and Chiabai, 2009; Pozzi, 2011). Furthermore, collaboration as an adaptation strategy is one of the most promising opportunities according to the SWOT analysis in order to eliminate different threats and reinforce ski resorts' business sustainability (Table 2-3). Co-operation (Bürki, et al. 2003) or another name of a strategy "ski conglomerates" (Scott, 2008, p. 1420) is considered to be an effective strategic decision because it enables small or medium small ski resorts to unite their capital and resources to send their customers to the places with enough snow coverage and divide profit afterwards, which regrettably, in practice does not happen in Scotland.

Advertising as a form of collaboration seems to be an expensive adaptation strategy and all the respondents without hesitation confirmed that (D1, D2, D3, D4, Z5, Z6, Z7, Z8, Z9). Especially Scottish ski resorts suffer from the lack of money. However, when opportunities arise to be grasped they work with SkiScotland website. There is a lot of marketing involved and radio stations, but only if they approach the ski resorts themselves. However, they do collaborate with VisitScotland, have their webpages and use Facebook, for instance, a closed group for skiers (D1, D2, D3 and D4) and Switzerland Tourism (Z5, Z6, Z7, Z8, Z9). Facebook was proven according to D1 to be a vital source of instant information predominantly about the weather. However, it seems challenging and pointless to advertise, for instance, two months in advance because of the snow's unreliable forecast. D1 placed an emphasis on the need to be very reactive and post the information promptly with regard to lots of snow, hence, it is all about spreading this important message out very quickly.

The empirical data uncovered that Swiss ski resorts had developed a special offer and acted together. If someone stays in a hotel or in a commercially rented flat, he will get "Davos Klosters inclusive". With this card all the cable cubs there are free and also the local bus service and rail ways from Davos to Küblis are also free of charge. This offer has been valid for 8 years and the managers seemed to take a special pride regarding it because it allowed them being more competitive even comparing with the Austrian ski resorts. The customers, for instance, of the Austrian ski resorts could feel it in a pocket by paying every time extra euros for the transportation in Austria, thus Swiss ski resorts act innovatively. The mentioned strategy (flexibility with a price at least during simmer) provides a significant competitive advantage for all five Swiss ski resorts in Davos.

It could be concluded that the intention to make a ski industry strong is present, but an actual implementation of cooperation (collaboration) plans is still in the embryonic stage predominantly among the Scottish ski resorts. It also became apparent from the field work that "a strong industry is more than just one resort" and

collaboration takes place predominantly for the marketing purposes with "certain limitations" both in Scotland in Switzerland (Morrison and Pickering, 2013, p. 184).

5.2.3.3 *All Year Tourism*

Diversification to year-round tourism has been underlined as a primary potential adaptation strategy especially with regard to lower-altitude resorts (König, U. and Abegg, B. 1997; Scott and McBoyle, 2007; Unbehaun, et al, 2008; Pickering, 2011). Scottish ski resorts are directly affected from the lower-altitude location; however, the empirical data revealed that some of them were not going to operate year-round and they refused flatly to even consider this adaptation strategy (D1, D2). In this regards, a vast number of journal articles are dedicated to summer use of ski resorts facilities as a future plan or a temporal measure as a part of adaptation strategies, but not something that needs to be implemented on the constant basis (Scott et al. 2006; Needham, et al. 2011; Pickering and Morrison, 2013). Resorts might face loss of financial stability and internal sustainability due to a lack of innovativeness (Vanat, 2014). The paradox occurs when ski resorts refuse to even try implementing it as a temporal measure, not to mention converting it to the regular operation strategy, but still claim to be business sustainable and viable, which does not reflect the reality. The question remains - despite the discovered and acknowledged barriers of the business sustainability, which led to a revenue loss (Subchapter 5.2.2), if not a threat to close down the ski resort, what might be a potential impetus for the mentioned ski resorts to be adaptable, active and proactive? It seemed as if were driven by the indifference and could fit under the category of 'fatalism' as an adaptation strategy, which includes ''business as usual'' and cancel ski tourism (Bürki et. al, 2003, p.7). From the personal perspective of the researcher, business as usual should not be called an adaptation strategy per se because it is not even an act of action or activity, hence, it should be excluded from "fatalism" category (Figure 2-5). By definition and its meaning "business as usual", which might lead to a bankruptcy of a ski resort, fits to the category of "fatalism", but as the adaptation strategy it does not seem to be relevant. Even "cancelling ski tourisms" as another element of "fatalism" could be called an adaptation strategy because it is an action triggered by the barriers of

profitability caused by the changing environment and implemented by a ski resort manager in the absence of other options to keep its business open.

There is a niche for flexibility and innovativeness in Scotland, though, for instance, when the weather is suddenly suitable for skiing, D3 re-opens the ski resort and even engages more staff for the situations like that praising the advantage that the staff is local, hence, the accommodation does not need to be provided (D3). It has been also admitted that his ski resort had been a year-round ski resort but there were occasions, when they had to let the staff go even in January or other winter months due to the snow deficiency. The operation of the ski resort in Scotland is "in waves" - they try to be open 7 days a week, but then are forced to close depending on the weather conditions (in 2012, for instance, the conditions were perfect all the way till middle June). In comparison with more confident and so-called "passion for the diversification" towards the year-round tourism Swiss ski resorts in unison confirmed to be functional all seasons with regard to the main cable run (Z5, Z6, Z7, Z8, Z9). Some of them have a short break in May for the purpose of maintenance (Z5). Their vision could be connected to the concept of world recognized reputation (Perry, 1971; Davison, 1981; Holden, 2000; Blackstock, et al. 2008; McCrum et al. 2009; Vanat, 2014) not only due to Davos being mostly for winter sports and world events, but also for other seasons. According to them, the year-round tourism, by all means, is a way to increase profitability, therefore, can reinforce their business sustainability.

As it has been demonstrated, some ski resorts in Scotland are eager and enthusiastic to remain open all year-round because they can not, however, rely solely on skiing. The mountain is here the year-round and there is an awareness of that, nevertheless, as a company, their hands are "tight" a little bit because of the weather (D3, D4). There is a realization that they need to do something, like to diversify their product in order to maintain and reinforce business sustainability, for example, by offering non-snow activities, which will be discussed below.

5.2.3.4 *Sale of Properties*

There is a radical adaptation strategy - sale of properties in resorts as the way to diversify incomes. The authors claim that more research is required to evaluate an implementation of the proposed strategy's advantages or disadvantages (Pickering and Barros, 2013). This strategy might be added under the category of 'fatalism' as an adaptation strategy, which includes ''business as usual'' and cancel ski tourism (Bürki et. al, 2003, p.7). All ski resorts in Switzerland did not even for a moment consider to sell their properties, which had demonstrated their determination to be adaptation strategic without giving up their ski business and in order to carry own their traditions in Davos. Traditions for ski resorts in Davos, according to the empirical data, are the very definition of being sustainable both externally and internally. On the contrary, only one Scottish ski resort (D1) was willing to shut down the ski resort without trying to strategically maintain its business sustainability and was reluctant to implement any adaptation strategies. It could be presumed that if closing the ski resort were the first and only solution which came to the managers' mind every time when any barrier occurred, that would be done without hesitation and measuring all pros and cons. It would happen so impulsively without developing an alternative solution, and then there would not be a higher chance to sell the property when the situation reaches its financial catastrophe. According to the manager, it happened in the past a few times.

5.2.3.5 *Non-snow Activities*

The following figure offers an overview of the non-snow related activities based on the empirical data derived from the interviews.

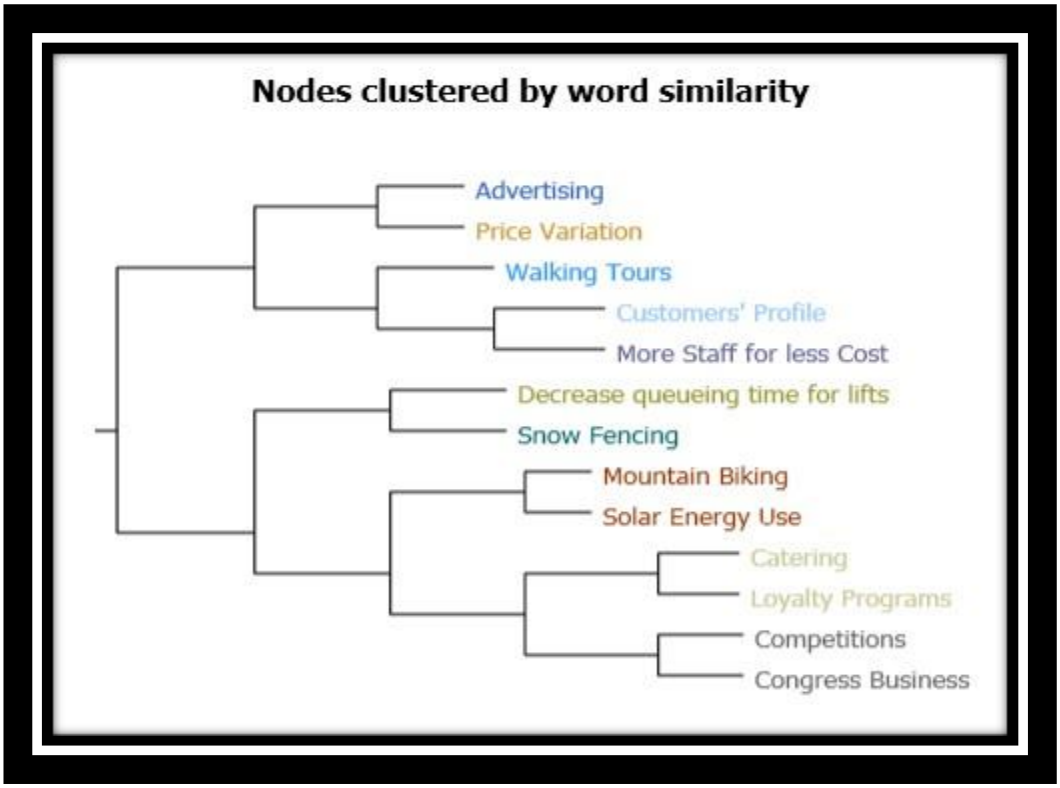


Figure 5-4 Non-snow Activities

The literature review has demonstrated that comparatively little research had been conducted on tourism at ski areas during the summer season. A few scholars attempted to analyse motivations of summer visitors at an Alpine Ski Area in British Columbia, in Eastern North America, in the Australian Alps, Northern-Sweden ski areas and in the Austrian Alps. The findings revealed some growing activities as hiking and mountain biking in the summer months connected with a popularity of using chairlifts. The interviews data corresponds to the literature in this regards - in summer season there is only the main cable, which transports mainly hikers and bikers and there is only one resort (all Swiss ski resorts, except for one; Scottish ski resorts – D3, D4). It is noteworthy to remark that due to a considerably little academic research related to non-snow activities as adaptation strategies, the Delphi Panel aimed to contribute to that gap as well. The outcomes of three consecutive rounds will be analysed in the Chapter (5.3) and mixed with the interviews data pro tanto.

5.2.3.5.1 *Advertising*

Advertising as an adaptation strategy has been recognized by all the interviewees with a different scale of significance and complexity. The detailed discussion and analysis of it is displayed in the section dedicated to Co-operation (5.2.3.2) because all the ski resorts had directly connected it to the collaboration and marketing.

5.2.3.5.2 *Price Variation*

Price variation as an adaptation strategy has been proposed by a few interviewees and had not even been listed in the Figure 2-5 Adaptation Strategies developed by Bürki, et al. (2003, pp. 7). It is indeed a strategy and the Swiss and Scottish ski resort had to act innovatively due to the changing environment and adapt to the barriers of business sustainability with a degree of flexibility. However, it is in particular the degree of flexibility, which differentiates the Scottish and Swiss ski resorts according to the raw data.

Ski resorts in Scotland are not that flexible to reduce the fixed prices for a season and apply any offers apart from the traditional discounts like for children, seniors and students (Chapter 2.11). The only deviation from the annually established prices is possible with regard to the season tickets, which plays an incentive role for customers to save money. There is, however, a problem limiting ski resorts to use widely season tickets, the problem creating another challenge – tracking the customers. It has been admitted that the frustration and dilemma had occurred with the season tickets and measurement of the ski resort performance. Season tickets system makes it hard to get precise numbers of skiers and develop a strategic plan for next years especially with an absence of the customers tracking system. The winter is measured by ski days. One person here for one skiing a day, so someone who buys 5 day ticket, that would be 5 skiing days. Somebody with a season ticket, it is calculated depending on how many days the ski resorts were open for skiing and how much of availability. Consequently, price variation as a strategy could be a “double-edged sword”.

In addition, there are discounts in the catering and in the shop of the Scottish ski resorts especially if you are local (D1, D2, D3). 20% of the revenue is accumulated from the catering. Just before the skiing starts every year D4's ski resort does a special ad (an offer) at the local newspaper. There are tickets discounts for locals, plus 10% for their families. It is an obvious attempt to be flexible despite the fact that for the Scottish ski resorts it is difficult to be innovative and play with a price because its market in most of the cases is a day visitor market with an aging population, which impacts dramatically on ski resorts business (Maxwell and MacLean, 2008; Bullough, 2011).

For ski resorts in Switzerland the prices are also fixed apart from the discounts for young people and children but not seniors comparing to Scotland (Chapter 2.10). Chapter 5.2.1 explicitly evaluates the Swiss so-called formula of sustainability, which equals traditions and high of price. It has been agreed to keep the price no matter what external or internal conditions might dictate in order not to destroy an image of Swiss high quality, which offers a great ski product for very expensive price. The extra values might be added on the top but reducing the price is never acceptable. Thus, Swiss ski resorts are not oriented towards the masses and traditions equal sustainability for Davos ski resorts. In addition, "the concept of the cheapest" is not the concept of the sustainability for Swiss ski resorts (Z5, Z6, Z7, Z8) with one deviated opinion expressed by Z9 with a possibility to reduce a price if situation gets very challenging. There is, however, an element of flexibility despite such a rigid position. The empirical data uncovered that Swiss ski resorts had developed a special offer. If someone stays in a hotel or in a commercially rented flat, he will get "Davos Klosters inclusive". With this card guests can use the public transport including all the mountain cables for free. This offer has been valid for 8 years allowed them being more competitive even comparing, for instance, to the Austrian ski resorts. The customers of the Austrian ski resorts could feel it in a pocket by paying every time extra euros for the transportation in Austria, thus Swiss ski resorts act innovatively. The mentioned strategy (flexibility with a price at least during summer) provides a

significant competitive advantage for all five Swiss ski resorts in Davos. It also demonstrates flexibility of ski resorts managers (Needham, 2011).

5.2.3.5.3 *Walking Tours and Mountain Biking*

A so-called substitute of skiing for some ski resorts (D1, D4, Z9) and an additional source of income when there is a snow deficiency (Z7) or for some (D4) - summer activities only are walking tours. It seems that it is a difficult one for a lot of people to understand to come along and just go for a walk. Expectations of what customers do are different. Usually, customers of ski resorts choose to go and ski but not to walk, or go hiking. The academic literature confirmed some growing activities as hiking and mountain biking in the summer months connected with a popularity of using chairlifts. In addition, according to the motivational factors analysis the data showed that it was a colossally difficult task to change an image or perception of a ski resort winter destination to a summer oriented destination (Scott et al. 2006; Needham, et al. 2011; Pickering and Morrison, 2013; Brouder and Lundmark, 2011; Steiger 2012). The interviews data corresponds to the literature in this regards - in summer season there is only the main cable, which transports mainly hikers and bikers and there is only one resort (all Swiss ski resorts, except for one; Scottish ski resorts – D3, D4). The ski resorts in Scotland hope that diversification will bring more business. They have plans to see the feasibility of concentration mountain biking in the air (D4).

Moreover, the interviews' data illustrates that the walking tours are not recommendable to organise in the areas, where there is a danger and that is why the "guided walking tours" should be implemented to minimize the danger. The guided tours allow also controlling the numbers, monitoring the damage, erosion, an impact on landscapes along with the work that rangers do. The Scottish ski resorts practice the "Walking Express" by bicycles, which is around 300 metres. Thus, with an absence of any other effective strategy walking tours could be considered yet the amount of money a ski resort would need to generate so that people go walking is too much. Another argument against it according to the empirical data - why wouldn't a ski resort diversify into other thing and how many people know that a ski resort is at

2000 feet in Scotland and how many people in Scotland would want to walk at 2000 feet? Not many people would want their leisure to be walking. It all seemed like a valid justification against the walking tours. It resonates with the common academic literature (Maxwell and MacLean, 2008; Needham, 2011 Bullough, 2011; Pozzi, 2011), which mostly encourages ski resorts to organize walking tours or mountain biking without considering all the implications on the ski resorts.

5.2.3.6 *Other Strategies*

After having critically analysed the Adaptation Strategies (Figure 2-5), developed by Bürki, (et al. 2003), there is a need to discuss other strategies derived from the interviews. The category of other strategies is constructed differently from the aforementioned sections, where every ski resort was addressing a specific adaptation strategy. In this case the researcher was fortunate to use one of the qualitative methodology advantages, which had been working with "naturally occurring data", the data derived directly from the participants without orchestrating it by asking a leading question or simply without formulating a question at all (Silverman, 2010, p. 389). Hence, a single strategy might have been used only in a ski resort that had indicated it.

All Swiss ski resorts (Z5, Z6, Z7, Z8, Z9) in unison highlighted the significance and benefits of the events, associated with the *Congress Business*. It serves to provide a stability of a ski resort and is, in fact, a tool to sustain their business for a future and an effective reliable solution to overcome barriers of business sustainability and viability. Davos in general is characterized as the destination with biggest and strongest events in Switzerland and it is the only destination in the Alps with the Congress Centre, hence, with the congress business. The data reveals that, without any doubt, events and congress business stabilize the season. If there is a World Cup event, those people, they will come, whether there is snow, rain or sunshine. They will come because of the event. With Spengler Cup teams, fans will come, whether it is cold or warm. They will come and the same applies to the congress business. It is a very long term business, which involves making deals until the year 2021; hence, the

congress business is a long term business. An important emphasis was made on the acknowledgment of not being aware, which kind of weather it was going to be in 2020. Nobody knows, whether, it will be a lot of snow or the scarcity of snow, but those people will come. According to all Swiss ski resort it could be called sustainable. The events make it sustainable and if the Swiss Frank is more expensive but the contracts for the event have been arranged in 2020, people would still come. It correlates with the academic literature by focusing on a sustainable profit over long term objectives, which is an advantage over the models of business, which are only short term related and as Smith and Sharicz (2011, p. 73) emphasize that "…organizations must make a shift from a short-term perspective to a long term perspective". It could be presumed that the Swiss ski resorts had tried to identify "trade-offs" like which marketing segments were dominant in a particular destination, tastes and trends (like business men and politicians attending the Congress business and World Economic Forum in Davos, sports fans, attending the Spengler Cup). According to Butler (1996), Liburd and Edwards (2010) a major problem of the concept of sustainability is a time frame: it takes a considerable amount of time to be certain that any activity is sustainable especially within such a dynamic field as tourism; in other words, long term strategies are not valid. The following presumption contradicts with the empirical data from the interviews. The Swiss ski resorts long term strategies until 2020 are the evidence of that contradiction.

The academic literature states that long term strategies are difficult to plan and implement without conducting a research in terms of customers' profiles to create and implement any long term strategy (Smith and Sharicz, 2011). With regard to the *Customers' Profiles* the interviews in Scotland show that customers' profiles are not being monitored very well with accurate figures. They capture customers' names when they rent equipment in order to provide them something extras, but not on a regular basis. It has been also clarified apologetically the absence of tracking systems, however, employees usually know loyal customers' faces because of 10 years of work there, but not the names. A few critical conclusions could be drawn regarding the last statement; first of all, what the percentage of the employees is, who

work in the ski resort at least for 10 years and second of all, knowing the faces but not tracking the names does not seem to be an effective approach to track the visitors. All five Swiss ski resorts in Davos confirmed that there has not been any tracking system among all 5 evaluated Swiss ski resorts in Davos (except for one, which was excluded from the field work of the current research). Z6 also noted that hotels within the area had tried to detect their customers, but the ski resorts had obtained only the information about numbers but not the personal data. Ski resorts usually receive the information about how many guests hotels accommodate and countries of their origin month by month only. Thus, the lack of the tracking system was recognized as the barrier of business sustainability but none of the ski resorts neither in Scotland not in Switzerland expressed a willingness to find a solution to the problem. Thus, ski resorts still face the problem of an incapability to take proactive actions for the long term growth, which might lead towards a loss of financial stability and internal sustainability of a ski resort (Vanat, 2014). Due to the fact that ski resorts don't have a proper tracking system *loyalty programs* logically according to them were out of strategic scenario.

And last but not least, a few minor strategies were mentioned. One ski resort in Scotland named as a task or strategy *to decrease queueing time for lifts*; another one – *more staff for less cost* and hiring predominantly local staff to avoid providing an accommodation for those, who don't live in the area. D2 briefly mentioned a task to pursue *a solar energy use*. With regard to a development of a higher terrain one Scottish ski resort manager confessed that it was not effective for Scotland because the main barrier was a wind and therefore, *snow fencing* was vital for accumulating snow due to that fact that snow cover is not reliable in all ski resorts because of the centre base stations' location (at 610 metres). The Scottish ski resorts are situated also above the tree-line, which means there are not natural barriers from the weather especially strong wind (Bullough, 2011). Unfortunately, due to the lack of innovativeness and by acknowledgment of a problem without solving it ski resorts might face a continuous loss of financial stability and internal sustainability (Vanat, 2014).

Based on the interviews responses, NVivo allows transparently illustrating the word frequencies by all the interviewees.

Figure 5-5 Word Frequencies

Source: NVivo.

Therefore, the raw data allows listing the most repeated words by all the interviewees such as: people, snow year, season, customers, resort, winter, sustainability, summers, holidays, environmental, artificial, weather, seasons, sustainable strategies, innovative programs, price, local and other frequencies (Figure 5-5).

5.3 Phase 2 (Delphi) – Introduction

Phase 2 had a purpose to reach the second aim of the research and organise the Delphi Study under the quantitative methodological stance, which was conducted between November 2013 and July 2014. The second aim to be addressed was:

- To develop a set of sustainability determinants for generic ski resort use.

Therefore, the series of three consecutive rounds of the Delphi Study were organized in order to examine and filter the sustainability determinants for generic ski resort use and to identify and evaluate systematic sustainability indicators to measure business sustainability of ski resorts. As it has been demonstrated in the literature review sections, the complexity of sustainability models, uncertain unclear and broad criteria of indicators and lack of empirically generic approach were those debatable issues that needed to be investigated. The Delphi study as the interactive process (Mehr and Neumann, 1970) allowed a group of individuals functioning as the whole to cope with complex problems (Linstone and Turoff, 2002). The analysis of the academic literature, Government reports and official newspapers revealed a range of problematic implications for ski resorts with a lack of consensus and weighted opinions. Thus, the research question for the Delphi was initially derived from the literature.

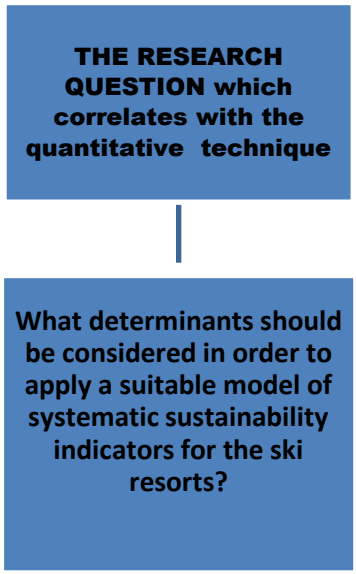


Figure 5-6 Phase 2- Research Question for Delphi

The nature of the Delphi technique assisted to reach the consensus regarding the definitions of sustainability indicators, model and business sustainability of ski resorts. The subsequent sections elucidate which determinants in the form of adaptation strategies should be taken into account prior the selection of the suitable

model of SIs. They also critically address the internal dilemma of a ski resort being dependable on weather conditions and demonstrate the validated experts' opinions. The Delphi Survey results have also contributed to the debatable solutions in the academic literature such as cancellations of ski business as a strategy, the implications of investing in snow fencing and many other which influence ski resort business sustainability and viability. All results have been exported from the Bristol Online Survey and imputed to the SPPS to be coded.

For the purpose of obtaining some clarity, finding a consensus among scholars and reinforcing anecdotal assumptions with academically acceptable definitions the first round of the Delphi has been constructed intentionally in the most suitable manner as the opened ended questions about definitions and questionnaire. During the second round of the Delphi the experts were given a possibility to rate their own amendments to the definitions as well as the amendments of other participants in order to demonstrate if they strongly disagree, disagree, have a neutral position, agree or strongly agree. The proposed scale has been coded by engaging SPSS software to analyse the results statistically. The sections below demonstrate a critical assessment of the findings from the Delphi and the academic literature.

5.3.1 Definitions of SI, Model – Critical Analysis

The researcher followed a traditional technique for the first round: opened ended questions and a questionnaire (Balasubramanian and Agarwal, 2012). The justification of the decision was the following - it is very common modification of the same classic Delphi to operate with such a format (Hsu and Sandford, 2007). The first part of the First Round contained the most debatable question, as it has been demonstrated earlier, about the external and internal sustainability, sustainability indicator and model. In order to move forward, a basic understanding and consensus of the investigated phenomena had to be reached. The following definition was offered to the Delphi Panel - "A sustainability indicator is a variable which can take a certain number of values (statistical) or states (qualitative) according to the circumstances (temporal) that influence or might influence sustainability" (Dubois,

2005, p. 141). The personal interpretation has been also offered by the researcher being guided by some academic scholars' opinions. Thus, a model of SIs for any ski resort destination is a tool that can be applied to a long term strategy which measures and weights not only the outer (external) sustainability with all its components (politico- economic, socio-cultural, environmental), but also the inner (internal) sustainability of a ski resort towards its business sustainability and viability (Harrison, 1996; Clark, et al. 2006; McCrum, et al., 2009; Bullough, 2011; (Morrison and Pickering, 2013). The researcher/facilitator additionally explained two elements of the definitions and asked experts' point of view on this matter. Outer (external) sustainability may operate with a certain set of sustainability indicators in the form of a model of SIs that predominantly evaluates an impact (positive or negative) towards the components of sustainability. Inner (internal) sustainability may operate with a set of sustainability indicators for the internal use generated from the actual or potential adaptation strategies in order to provide a business sustainability and viability for a ski resort.

The Delphi results originally were intended to be analysed separately according to their research paradigms. Due to the complex nature of the Delphi Technique as being a mixture of both qualitative and quantitative research approaches, the outcomes from the first round in the form of qualitative data were supposed to be coded using NVivo software, but instead it has been decided to further filter all the proposed elements to the definitions (Table 4.1) and engage SPPS as a tool for the data analysis. That decision allowed increasing the validity of the results because all the elements were weighted during all three rounds until the consensus was reached. The proposed elements, which reached the MEAN score 4.00 or above (Table 4.2.2), indicate that experts either agreed or strongly agreed (over 80%), the consensus was reached and the definitions have to be altered accordingly.

After all rounds the Delphi Experts agreed that Definition of Sustainability Indicator for a ski resort should:

1. Help to illustrate areas, where more policy action is needed **(the consensus was reached after Round 2)**
2. Benchmark to compare between regions and resorts **(the consensus was reached after Round 2)**
3. Provide an instrument for monitoring and comparing progress realized in regions and resorts **(the consensus was reached after Round 2)**
4. Provide a useful information on a sustainable performance of a ski resort **(the consensus was reached after Round 2)**
5. Be based on a process of sustainability assessment that directs decision-making towards sustainability **(the consensus was reached after Round 2)**
6. Provide useful information enabling sustainability direction and progress to be determined **(the consensus was reached after Round 2)**
7. Help to make a diagnosis and monitoring of the information collected **(the consensus was reached after Round 2)**
8. Be used as instruments and techniques for planning and management of the ski destinations **(the consensus was reached after Round 2)**
9. Inspire policies to apply corrective measures and also to evaluate current policies **(the consensus was reached after Round 2)**
10. Include economic viability **(3.70 – after round 2) VS (4.22 - after Round 3 and re-rating)**
11. Be a strong proponent of sustainability **(3.70 - after round 2) VS (4.33 - after Round 3 and re-rating)**
12. Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each **(3.30 - after round 2) VS (4.11 - after Round 3 and re-rating)**

There are different definitions of indicators; however, the researcher uses the one offered by Dubois (2005) because it corresponds with the chosen mixed methods approaches by combining both qualitative and quantitative components. Therefore, an indicator is "a variable which can take a certain number of values (statistical) or states (qualitative) according to circumstances (temporal)" (2005, p. 141).

The working definition offered by Dubois (2005) had to be altered and expanded due to the fact that the Delphi Experts have all reached their consensus after three rounds and also offered and agreed upon the new components. Both the temporal and spatial scales reinforced their relevance and validity as the components of the original definition **(3.80 - after Round 2) VS (4.11 - after Round 3 and re-rating).**

In addition, according to the experts' opinions sustainably indicator has to help to illustrate areas, where more policy action is needed **(the consensus was reached after Round 2)** and inspire policies to apply corrective measures and also to evaluate current policies **(the consensus was reached after Round 2).** However, Weaver (2008) acknowledges policies as a factor of relevance in terms of sustainability of ski resorts and its measurement. He also claims that the challenge is to adopt the policies in practice and identify which formulas to use. Nevertheless, other factors have to be taken into consideration while implementing certain policies, like financial constraints, stakeholder interests, level of public support and politics. In might sound logical in theory but from the critical point of view and regarding ski resorts managers new policies and its impact have to benefit mainly a ski resort and their business sustainability. Therefore, such components like stakeholders' interests, public support and politics will be less significant for a ski resort rather than, for instance, potential restraints while implementing a certain policy to measure sustainability. Thus, the proposed equal treatment of the components might not necessarily be equal and might depend on who is going to implement policies and its purpose. The purpose could be to help to make a diagnosis and monitoring of the information collected **(the consensus was reached after Round 2)** that is why SIs can be used as instruments and techniques for planning and management the ski destinations **(the consensus was reached after Round 2).**

The Delphi results also revealed and validated that sustainability indicator should be a strong proponent of sustainability **(3.70 - after round 2) VS (4.33 - after Round 3 and re-rating)** and the model needs to be broken down into economic, environment and socio-cultural elements with different criteria for indicators in each **(3.30 - after round 2) VS (4.11 - after Round 3 and re-rating).** The academic literature

confirms that too emphasising on the need to develop more comprehensive sustainable tourism indicators that can build a connection between tourism and TBL of sustainability (Inskeep, 1991; Butler, 1993a; Coccossis, 1996; Dymond, 1997; Goodall and Stabler, 1997; Mowforth and Munt, 1998; Weaver, 1998; Swarbrooke, 1999; Weaver and Lawton, 1999; James, 2000; Miller, 2001a).

Moreover, Butler (1999b, p. 16) states that without indicators the term sustainable tourism is "meaningless". With regard to that the Delphi Experts also agreed with the literature demonstrating that SI should be based on a process of sustainability assessment that directs decision-making towards sustainability **(the consensus was reached after Round 2)** and provide useful information enabling sustainability direction and progress to be determined **(the consensus was reached after Round 2).** A concern rises by defying what "enabling sustainability direction" means and how long it takes to reach sustainability by using sustainability indicators. It takes a long period of time to be positive about any activity to be called sustainable (Butler, 1996) and it is a subjective process unless it is based on an aggregate of objective characteristics, such as indicators. Indicators are needed to monitor if standards are being followed. If not, management actions might be required to detect any violations. The suitable indicators are those that respond to the threats regarding sustainability (UNTWO, 2004a). Indicators can help destinations to determine their sustainable tourism objectives, establish and track progress and identify long-term strategies for the future (McCool and Lime, 2001). In conformity to the aforementioned, the Delphi Experts agreed that sustainability indicators identify strengths and weaknesses of the ski resort management **(3.50 - after round 2) VS (4.22 - after Round 3 and re-rating),** which is directly related to the progress tracking. SI should correct negative impacts **(3.20 - after Round 2) VS (4.22 - after Round 3 and re-rating)**. Nevertheless, a wrong selection of indicators can lead to negative consequences on the monitoring system (Choi and Sirakaya, 2006).

Lu and Nepal (2009, p. 13) highlighted that over the period of 15 years the scale of SIs has shifted from "project-oriented" to "destination-oriented", which demonstrates the trend of their generic use. According to the Delphi findings sustainability

indicators should be linked to the dynamics of the main elements of a resort over time **(3.90 - after Round 2) VS (4.22 - after Round 3 and re-rating)** and reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability **(3.90 - after Round 2) VS (4.44 - after Round 3 and re-rating).** Different interpretations of SIs and issues with scale (Hughes, 2002) might however, create complications to detect the dynamics over the time for the ski resorts. In addition, overall indicators are difficult to assess (Miller, 2001), use of indicators can also lead to over-dependence on quantitative measures (Miller and Twining-Ward, 2005).

Fernandez and Rivero (2009) claim that practical effectiveness is very low. The SI should also illustrate the level of performance; hence the progress achieved **(3.90 - after Round 2) VS (4.44 - after Round 3 and re-rating).** Indicators are measured to discover standards of quality like the level of performance (Manning, 2011). Sustainably Indicator is benchmark to compare between regions and resorts **(the consensus was reached after Round 2).** It also should provide useful information on a sustainable performance of a ski resort **(the consensus was reached after Round 2).** All of these indeed validate the shift from "project-oriented" to "destination-oriented" and with regard to regions and resorts SIs can provide an instrument for monitoring and comparing progress realized in regions and resorts **(the consensus was reached after Round 2).**

According to Manning (p. 670, 2011) indicators are "social, resource, or managerial variables defining the quality of settings and experiences". It has been confirmed by the Delphi Experts that SI should acquire meaning in a system as a whole and must be interpreted within some values/data of reference **(3.50 - after round 2) VS (4.00 - after Round 3 and re-rating)** and not only be used for the conventional tourism purposes such as arrival numbers, length of stay and tourism expenditure (Ceron and Dubois, 2003) or season length (Scott, et al. 2012). The latent authors claim that inappropriate indicators such as season length, for instance, have nothing to do with ski resorts' operations and profitability. However, the season length has a direct influence on ski resorts' business sustainability, its operations and profitability. The

Delphi Experts also offered to include economic viability to SI **(3.70 – after round 2) VS (4.22 - after Round 3 and re-rating)** due to the facts that many factors have an impact on ski resorts profitability and season' length is one of the most significant (Findings 4.3.5). It also correlates to the need "to secure a sustainable business model in ski resorts' which will benefit ski resorts' viability in a long run" (Bullough, p. 41, 2011).

Not only the elements which finally reached consensus after three consecutive rounds are crucial and need to be critically assessed, but also the elements, which failed to reach it, are also of high importance especially if they resonate with an academic literature. The reasons why they did not obtain consensus are worth examining. Therefore, based on the SPSS analysis the components with MEAN below 4.00 after all three rounds of weighting did not obtain enough relevance to the definitions, but were close to obtaining it. The first element was supposed to claim that the model of sustainability indicators should help to merit, identify and calculate sustainability using different formulas **(3.70 - after Round 2) VS (3.00 - after Round 3 and re-rating).** The Delphi Experts disagreed and eliminated that assumption, whereas, for instance Scerri (2010) asserts that the concept of a true sustainability for ski resorts may be impossible to achieve in practice due to the lack of common measurement of sustainability. Lu and Nepal (2009) are convinced that sustainability can only be implemented successfully if there are useful, reliable and comprehensive sustainability indicators available. The findings of the Delphi regarding calculating sustainability, using formulas established that as long as there is not common ground among the scholars regarding what "useful, reliable, comprehensive SIs" means in practice (Lu and Nepal, 2009; Scerry, 2010) and how to test them it is just a debate, which should be re-focused towards more significant elements. In addition, the experts concluded that a model should not become a measurement not only for the sake of it, which has no value but to pursue changes **(3.90 - after Round 2) VS (3.89 - after Round 3 and re-rating)**.

In conformity to the aforementioned the Delphi experts also agreed to not give an importance to the statement that the model of sustainability indicators should be less

holistic and more precise towards tourism enterprises **(3.40 - after round 2) VS (2.11 after Round 3 and re-rating).** By not validating that latent element the experts presumed that the scholars' opinions might sound positive and promising but in reality the formulas should be tested and empirically proven to be effective. Besides, it takes a long period of time to be positive about any activity to be called sustainable (Butler, 1996) and it is a subjective process unless it is based on the aggregate of objective characteristics, such as indicators.

One of the most controversial opinions supported by the Delphi Experts was regarding the environmental issues for ski resorts. Scott (2006) environmental issues, like climate change may alter routine ways of operation. By deciding to exclude this element after three rounds and saying there is no need to include more environmental issues regarding ski resorts even if stakeholders are able to foresee the opportunity costs of the development and activities **(3.60 - after round 2) VS (3.11 - after Round 3 and re-rating)** the experts contradicted most of the evaluated literature. Activities like, for instance, development of higher-elevation snow ski resorts (Tsuyuzaki, 1994; Hudson, 1996; Bürki, et. al, 2003; Hudson, 2006; Herremans, 2006) should be planned and the experts' opinion seems to be quite irrational and not far-sighted. Scott and Lemieux (2013) insist on taking into the major consideration climate change, its implications and an urge to focus on the environmental issues. Moreover, the academic literature connects ski resorts, location and environmental implications. Mountains are the attributes of ski resorts destination (Buckley, 2008; Scott and McBoyle, 2007). Körner (2003) states the further from the equator the mountains are, the lower that altitude at which snow arises and the implication of that might create certain problems (Elsasser and Bürki, 2002; Bürki et. al, 2003; Tommasini, 2003; Pozzi, 2011; Scott, et. al, 2012).

Another element that unexpectedly did not gain the experts' consensus was the statement that a model should be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development **(3.40 - after round 2) VS (3.33 - after Round 3 and re-rating).** The academic literature claims an opposite (Buckley, 2008; Mill, 2008; Valls and Sarda, 2009; Pickering, 2011;

Scott, et al. 2012; Holden and Fennel, 2013; Pickering and Morrison, 2013). Indicators can help destinations determining their sustainable development objectives, establish and track progress and identify long term strategies for the future (McCool and Lime, 2001). Moreover, the Delphi experts disagreed that sustainability indicators can enhance the sustainability of a destination as a way to improve the competitive position of the destination **(3.60 - after Round 2) VS (3.78 - after Round 3 and re-rating)**. Indicators are needed to monitor if standards are being followed. If not, management actions might be required to detect any violations. According to Manning (p. 670, 2011) indicators are "social, resource, or managerial variables defining the quality of settings and experiences". Indicators are measured to discover standards of quality and contribute to the destination's competitive position (Miller, 2001; Rebollo and Baidal, 2003; Choi and Sirakaya, 2006; Schianetz and Kavanagh, 2008), which the Delphi experts failed to recognise.

The academic literature confirms the importance of factors that may have an impact on selection of working indicators in particular destinations such as "policy relevance, the kind of approach to sustainability, measurability, financial constraints, stakeholder interests, level of public support and politics" (Weaver, 2008, p. 27). Whereas, the Delphi Experts did not support that and stated that SIs should not clarify what aspects, assets, actors and activities are targeted **(3.20 - after Round 2) VS (3.67 - after Round 3 and re-rating)** and should not be dependent on the type of ski resort **(3.30 - after Round 2) VS (3.22 - after Round 3 and re-rating).**

The Delphi Experts did not also recognise the importance of measuring the inner sustainability of a ski resort, its stability and surviving in a long run **(3.90 - after Round 2) VS (3.67 - after Round 3 and re-rating).** It corresponds with a descriptive, too wide of set of indicators, which reflect purely the external sustainability of resorts as destinations and leans towards the outside environment predominantly rather than taking into account factors, indicators of resorts' business (internal) sustainability and viability (Appendix 2, UNTWO, 2004a). They could only be used by the ski resorts assessing the environmental, economic, politico-social and cultural impact, thus, externally, but, regrettably, not internally. However, the

findings from the phase 1 (interviews) contracted that entirely (Chapter 5.2), which seems to be logical because the interviewees were the managers of the ski resorts in Switzerland and Scotland and their major concern is the internal business sustainability and viability, whereas, the Delphi experts are the academic scholars.

5.3.2 Critical Analysis of Determinants-Data Mix

The second part of the Delphi Survey aimed to filter and weight the selectively chosen adaptation strategies or determinates, which are of high importance prior to selection of a suitable model of sustainability indicators based on the academic literature. In order to show resilience rather than sensitivity to climate change, ski resorts should implement adaptation strategies (Bicknell and McManus, 2006; Scott, 2006; Del Matto, 2007; Pozzi, 2011). The section below finally combines and demonstrates all last elements from all three rounds of the Delphi Study, including those elements, which obtained the experts' consensus.

Adaptation strategies or determinants for a ski resort with regard to the changing environment:

- An artificial snow making
- Development of higher terrain
- Cooperation with other ski resorts
- Alteration of time to ski during the season

A more holistic approach needed to be implemented in the forms of adaptation strategies as measures for diversification and resistance to a rapidly changing environment (Dawson and Scott, 2010). The artificial snowmaking is widely discussed in the academic literature and is considered to be an important adaptation strategy with regard to the changing environment (Scott, 2006; Skiing, 2014; GRASSO, 2014). The presumption was "if we had to rely on snow from the heavens,

the ski industry would be bankrupt" and the realization of snow making mechanism's actuality has been taken place already in 1988 (MacDonald, 1988, cited in Scott, et al. 2006, p. 378). Thus, the Delphi Experts validated the significance of this determinant. There are, without any doubt, the implications like the cost, the amount of water (Morrison and Pickering, 2013) and this is the case for the Scottish ski resorts, but the purpose of Delphi was not to evaluate the implications but to filter and narrow down the wide list of adaptation strategies offered by the scholars. The data from the Phase 1 has also revealed that the Swiss ski resorts use an artificial snow especially to guarantee official days of opening, as well as the length of the ski season.

Development of higher terrain was recognized and validated to be an effective strategy both after the Delphi Rounds and in the academic literature (Tsuyuzaki, 1994; Hudson, 1996; König and Abegg, 1997; Elsasser and Bürki, 2002; Tommasini, 2003; Bürki, et. al, 2003; Hudson, 2006; Scott, 2008; Herremans, 2006; Faullant, et al. 2008). Both Swiss and Scottish ski resorts destinations did not pay enough attention to that sustainability determinant (Phase 1).

Collaboration and cooperation as another adaptation strategy has been proven to be important both after three rounds of Delphi and in the literature (Scott and McBoyle, 2007). Both destinations after the conducted interviews acknowledged this determinant in theory but in practice barely implemented.

Alteration of time to ski during the season has been validated by all the Delphi Experts despite the fact that it was given less importance in the academic literature, however, the Scottish ski resorts have also confirmed its importance, whereas, according to the raw data collected in Switzerland the alteration of time to ski is not an ideal option and in order to maintain it an artificial snow is applied as a way to sustain their traditional annual time of operation.

With regard to the changing in government polices about sustainability the following adaptation strategies (determinants) for a ski resort reached the consensus:

- New policy adaptation
- Cooperation with another ski resort and implementation of new policies in collaboration
- Alteration of time to ski during the season (after round 2 and 3)

All the displayed and validated determinants could be effective strategic choices for the ski resorts especially if new policies encourage pursuing winter sports (Chappelet, 2010), adequate (Suchet and Raspaud, 2010) and supportive but without a pressure from the Government to fulfil a social role without a suitable support (Phillips, 2012). After the interviews (Phase 1) the Scottish ski resorts expressed a lack of the Government support, which they require even more than the Swiss ski resorts. The latent highlighted some restraints caused by policies such as new Health System, which prevents people from visiting Davos; educational system, which does not encourage children to pursue winter sport. Thus, the support is lacking and pressure from the Government has completely an opposite effect.

With regard to the changing economic climate the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Cooperation with another ski resort
- Non-snow related activities
- New marketing strategies (after round 2 and 3)
- Revenue diversification (after round 2 and 3)

Co-operation (Bürki, et al. 2003) or another name of a strategy "ski conglomerates" (Scott, 2008, p. 1420) is considered to be an effective strategic decision because it enables small or medium small ski resorts to unite their capital and resources, to send their customers to the places with enough snow coverage and divide profit afterwards. In practice, it could be a hard task due to the polarized views as the data from the interviews demonstrated. Above all, it seems unrealistic to satisfy needs of stakeholders and customers. "A strong industry is more than just one resort"

however, collaboration sometimes takes place predominantly for the marketing purposes (Morrison and Pickering, 2013, p. 184) and the Delphi Experts have also proposed "new marketing strategies" as the strategy and validated it after all three rounds.

Non-snow related activities and revenue diversification are directly connected with each other. Not only the Delphi Experts admitted the significance of these adaptation strategies but also the academic literature and both ski resorts destinations (Phase 1). Diversification to year-round tourism has been underlined as a primary potential adaptation strategy especially with regard to lower-altitude resorts (König, U. and Abegg, B. 1997; Scott and McBoyle, 2007; Unbehaun, et al, 2008; Pickering, 2011). Swiss ski resorts relatively successfully diversify their product while Scottish ski resorts face lots of challenges, for instance, breaking customers' perception of winter ski resorts and advertise it for summer activities, like "mountain walking", that has a few complications as well and others (Sub-chapter 5.2.3 – Adaptation Strategies). Summer season activities (Needham, 2011) and non-snow related activities should also be planned and implemented (Cockerell, 1994; Wickers, 1994; König, U. and Abegg, B. 1997; Bicknell and McManus, 2006; Unbehaun, et al, 2008; Scott, 2008; Suchet and Raspaud, 2010; Pickering, 2011). However, in practice planning and implementation of those activities appeared to go through a long costly process and not always proved to be successful (Phase 1).

With regard to the changing socio-cultural environment the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Reinforcing inhabitants' engagement
- Cooperation with another ski resort
- Non-snow related activities
- Public education (extremely relevant after round 2 and 3)

The non-snow related activities and cooperation with another ski resort have been analysed above. In terms of public education and its relevance with regard to the

changing socio-cultural environment the Delphi Experts reached their compromise. In order for the public education to be successful public funding might be required (Bullough, 2011) and the Scottish ski resorts emphasised that too. In addition, a political encouragement to pursue winter sports might be vital (Chappelet, 2010), for instance, to attract young skiers and the data from the interviews reinforced that particular sustainability determinant: skiing is in Swiss DNA but incentives from the Government are important due to the rapid increase of foreigners in the schools. However, it should not only be a Government's responsibility, but also ski resorts need to be proactive too. More importantly, ski resorts managers need to break dominant visitors' perceptions (Scott et. al, 2006) and for example, gain non-skiers and convert them into loyal customers. In addition, to reinforce inhabitants' engagement ski resorts managers might also develop some marketing activities (Butler, 1996; Vanat, 2014) and implement innovative strategies (Maxwell and MacLean, 2008; Vanat, 2014). Scottish ski resorts aim to hire predominantly local staff but not only because they follow a concept of the inhabitants' engagement, but also because it is more convenient for them as they won't need to provide an accommodation to the local employees. However, the Swiss ski resorts tend to hire more culturally diversified staff because their percent of foreign customers is much higher, but they also tend to engage local people especially to participate in the international events that take place annually in Davos.

With regard to the changing technology the following adaptation strategies (determinants) for a ski resort reached the consensus:

- Artificial snow making
- Investing in easiness of transportation
- Staff training
- New marketing strategies (after round 2 and 3)
- Public education (after round 2 and 3)

The Delphi Experts proposed and validated the following element - investing in easiness of transportation. For ski resorts geographical position and distance for major establishments could be both advantage and disadvantage (Perry, 1971;

Davison, 1981; Perry, 2006). An adequate transportation is important to attract customers and this is a very crucial issue for the Scottish ski resorts due to their remoteness, but less crucial for the Swiss ski resorts as it has been established (Sub-Chapter 5.2.2 – Barriers of Profitability and Sustainability).

Two figures below illustrate transparently the adaptation strategies proposed by Bürki (et al. 2003), that were used as a foundation for the Delphi Experts Survey along with the expanded list of the adaptation strategies proposed by Scott and McBoyle (2006) in order to link the literature with the results from the Delphi.

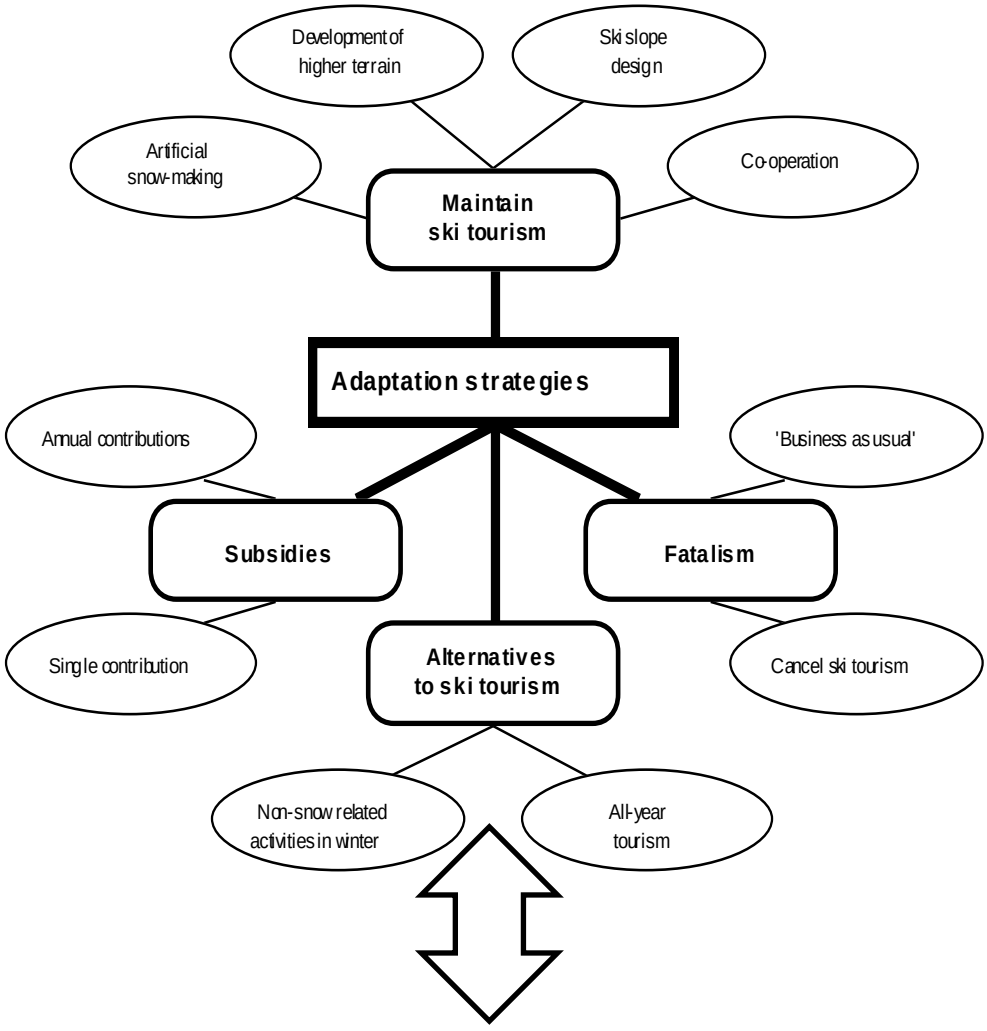


Figure 5-7 Adaptation Strategies

Source: Bürki (et al. 2003, p.7)

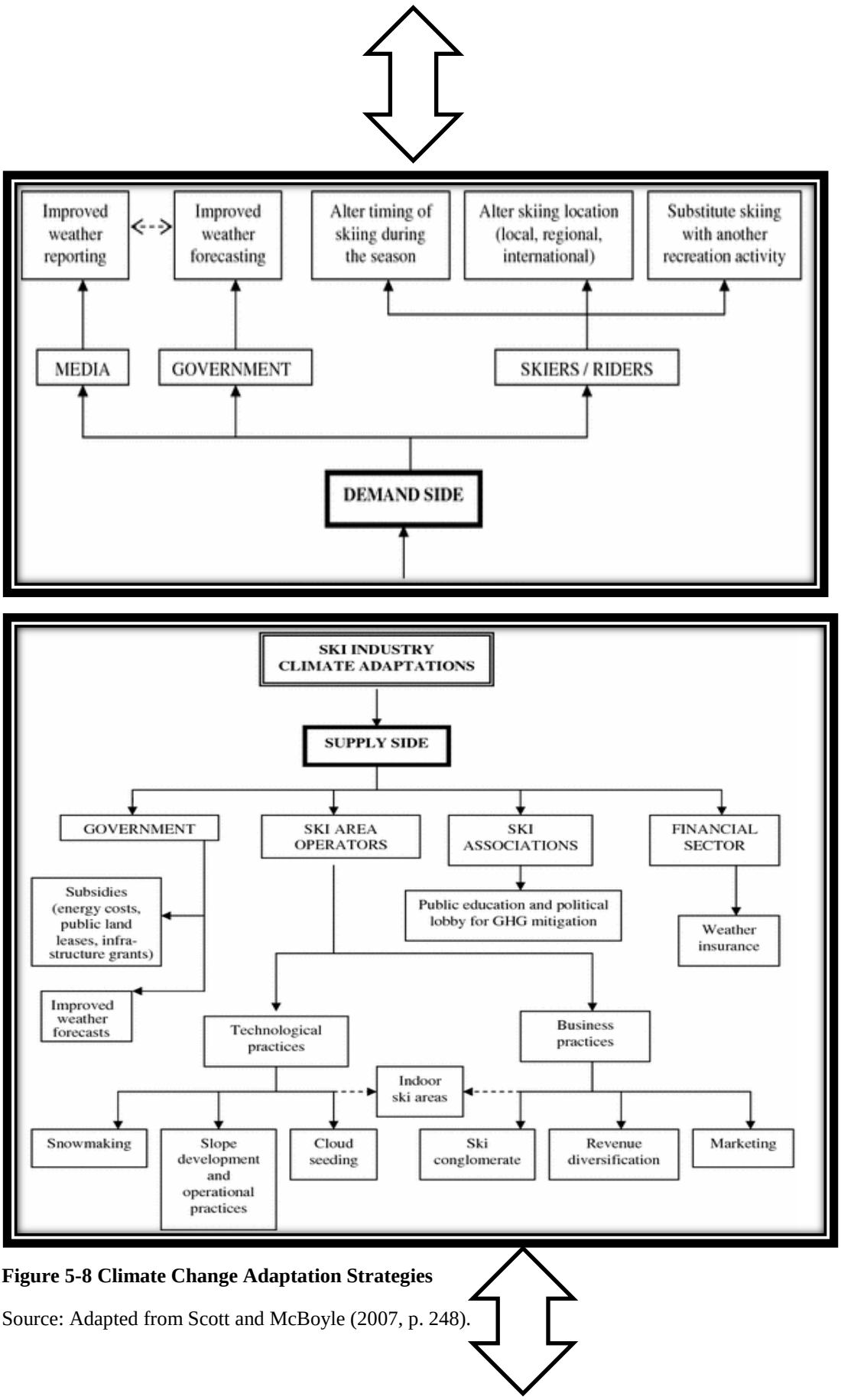


Figure 5-8 Climate Change Adaptation Strategies

Source: Adapted from Scott and McBoyle (2007, p. 248).

The following figure demonstrates a list of seven implicit determinants (p.27 of the thesis). One of them - the adaptation strategies (Scott and McBoyle, 2007), which had been filtered, weighted and narrowed down during the Delphi Study by the Delphi Experts and became a framework for a future selection of a model of sustainability indicators (McCrum et. al, 2009).

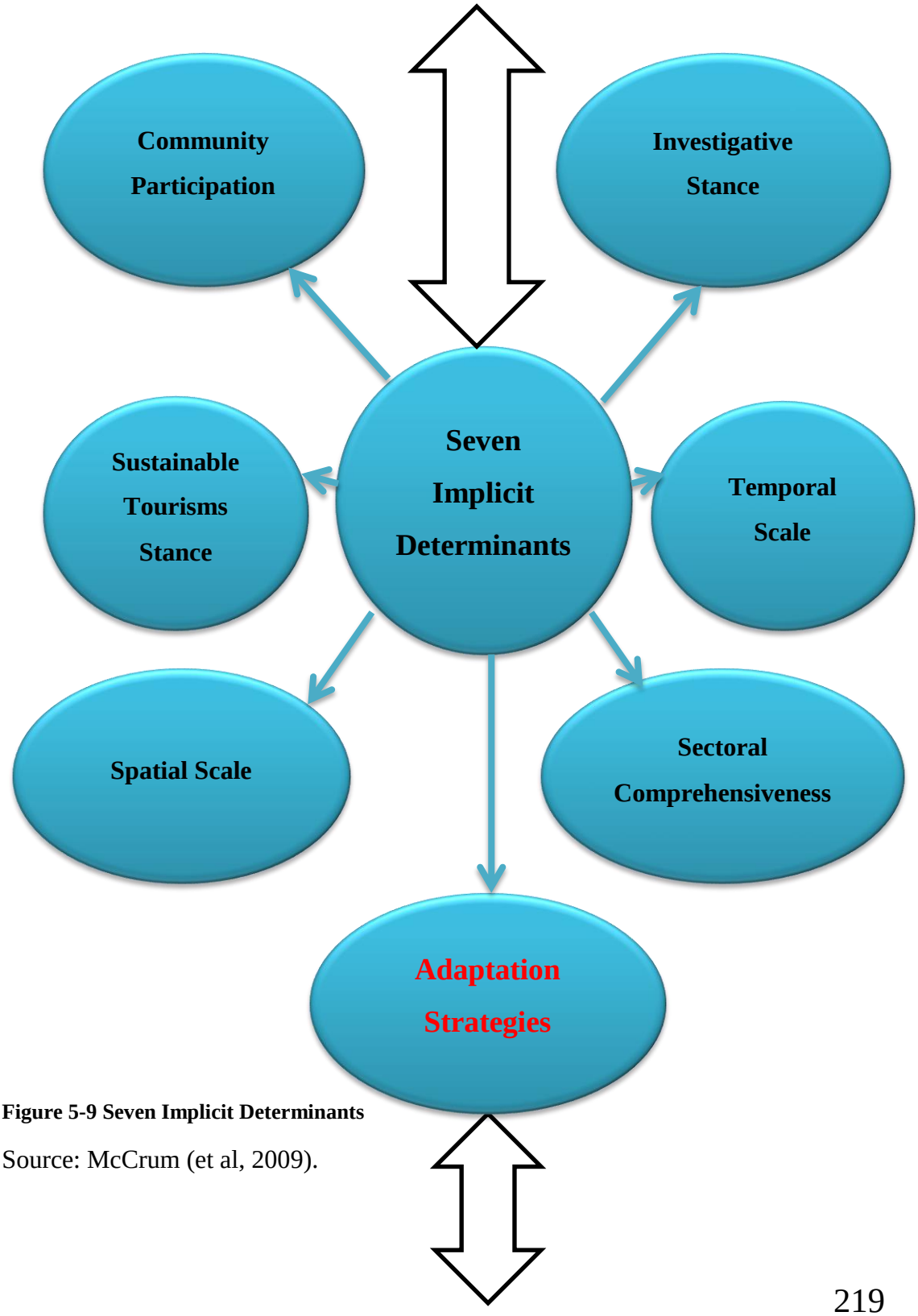


Figure 5-9 Seven Implicit Determinants

Source: McCrum (et al, 2009).

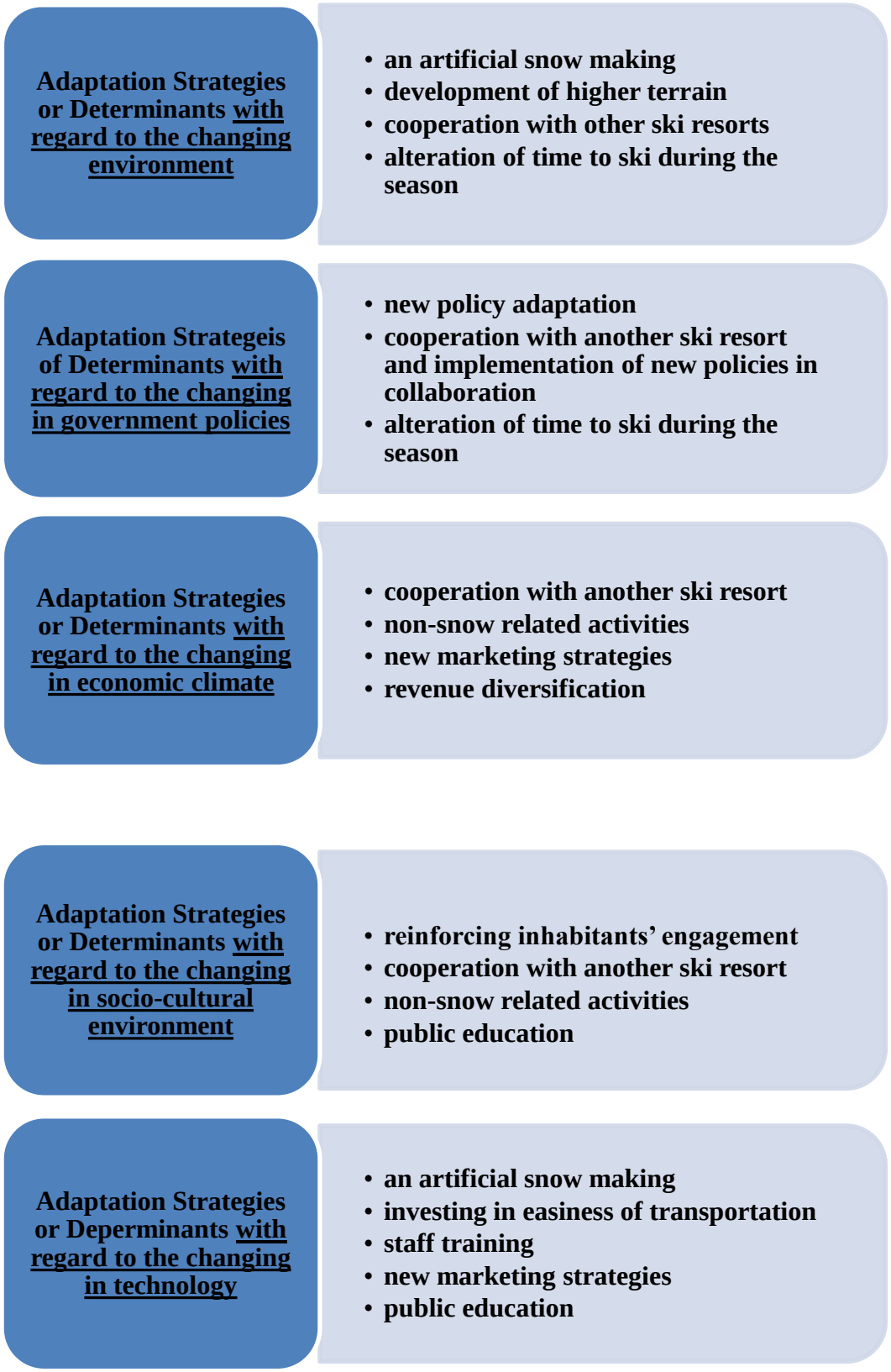


Figure 5-10 New Framework

The detailed anaylsis of the Delphi Study and development of a new framework was demonstrated in the Chapter 3.8, Chapter 4.4, Chapter 5.3. All the elements of the new framework have reached a consensus among the Delphi Experts during three consecutuve rounds (Appendix, 6; Appendix 7 and Appendix8).

Chapter 6: Conclusion

6.1 Introduction

The purpose of this chapter is to bring this research to a conclusion. It aims to provide an overview of the work by addressing the aims and objectives of the research, its key themes in the literature, highlighting the used methodology and discussing the main findings and interpretations. In addition, this chapter focuses on the contribution of this research to theory and limitations, which were acknowledged. It also builds a link for a future research, which this study could become a platform for.

6.2 Research Overview

This thesis sought to investigate ski resorts business sustainability by comparing Scottish and Swiss ski resorts. Recent commentaries such as those of Hall (2008a), Scott (2008) and Scott and Becken (2010) demonstrated the rapid increase in the number of publications exploring at least some of the relationships between climate change and tourism, economics' implications and tourism, social connection and tourism in terms of sustainability and viability. The analysis of the CABI Direct database, that has been undertaken by Weaver (2011), revealed that in 128 English-language tourism journal articles published from 1986 to 2009 such relationships were the dominant topic. The number of published papers was gradually increasing: with just six from 1986 to 1996, but 44 from 1997 to 2005 and 80 from 2006 to 2009. Thus, according to Scott and Becken (2010, p. 286) "the awareness phase" has changed and converted into the stage when the scholars were concerned about the resorts and their operation, which had been proven by a higher percentage of academic articles. The awareness phase from the literature provided a platform for an empirical research.

Moreover, about 40% of the empirical papers targeted ski resorts, where 15% focused on the impact of climate change on tourism. According to the United Nations World Tourism Organization, the United Nations Environment Programme and the World Meteorological Organizations climate change "must be considered the

greatest challenge to the sustainability of tourism in the 21st century" (UNWTO-UNEP-WMO, 2008, p. 38). Nevertheless, the knowledge about ski resorts and climate change and local involvement was very limited in the sense of realizing its market implications for developing future adaptation strategies (Scott, 2008; Scott, 2011; Holden and Fennell, 2013). A critical assessment and an empirical research among ski resorts destinations uncovered that quite frequently knowledge or perceptions of climate change implications did concern ski tourism representatives, but the concern had been limited towards the realization of the challenges only without offering tourism development and adaptation strategies (Pickering and Morrison, 2013). There was thus the immediate need not only to create adaptation strategies, but also to start implementing them as quickly as possible, otherwise; the ski industry would have been jeopardized (Luthe and Schläpfer, 2011).

Rosenthal (2007) and Filho (2009) emphasized that one of the main indicators of ski resort sustainability was a rising concern of the particular resort's inhabitants connected with the significant loss of revenue of the local budget brought by tourism. In 2011 over the winter season in Davos (Switzerland) the loss was 1.2 million Swiss francs, which as Gaudenz Thoma, the head of Graubünden Tourism in Switzerland stated, had been beyond critical. In line with that the inhabitants of Davos expressed their concern in their letters to local government (Meier and Wille, 2011).

The world nowadays is changing very fast due to economic crises, political situations, social movements and religious factors, which is why the central role of a manager was "no longer to manage stability, but to manage change*"* (Heap and Ingram, 1980-2007, p. 23) and to sustain business by offering various innovative approaches (Unbehaun, et al. 2008; Luthe and Schläpfer, 2011; Kušćer, 2014). The point of view of these authors echoed with a double force in Bullough's report for the Scottish ski industry, where he strongly emphasized that doing absolutely nothing will cause a decline but creating a small growth might provide an economic return on the capital investment equivalent to 20-33% (2011, p. 67). In Scotland the previous research conducted in 2007 and 2008 (an online questionnaire and face-to-face interviews with skiers at the five Scottish ski resorts) did not take into consideration

a perspective of ski resorts themselves and their functioning, ignored a critical issue of business sustainability and viability focusing purely on sustainability in general (McCrum, et al., 2009). Thus, the Scottish published data was not up to date and lack of throughout view from the angle of ski resorts' viability to sustain their business. It was also advisable to increase business viability of the Scottish ski resorts by the diversification of the proposals for improvement. In addition, this general statement had only the declarative meaning without any concrete conclusions and action plans. Therefore, the current research targeted to analyse the selected Scottish and Swiss ski resorts, which as became evident, had not been conducted till now taken into consideration the economic, environmental, social, political aspects in synergy.

In addition, the explorative comparative study in general was not an easy task. Such studies usually faced many challenges and they were not easy to be conducted due to the selection of variables and issues, which could have been accurately compared; geographical diversification; invested resources; language barriers; methodological traps and many other factors to consider (Dieke, 1993; Pearce, 1993). However, the value of comparative studies should not be underestimated. According to Pearce (1993) a choice of two locations, destinations or companies could not have been influenced entirely by their similarities but also by their differences otherwise; future lessons, outcomes and contributions would not have an impact or would have been useless to the science. This research has focused upon two ski resort destinations: Scotland and Switzerland. The rationale of a necessity to conduct an empirical research in both countries in 2012 was the discovered declining statistical data for the previous three winter seasons in the ski resorts. The amount of customers in Scotland peaked at 1.4 million for the 2007/08 winter declined to 1.1 million for the 2010/11 and 2011/12. With regard to five Scottish ski resorts, the overall statistical data has detected a decline of skiers, for instance, with the maximum of 660,000 skiers during the most successful winter season in 1998 and only 90, 000 skiers in 2007 (Bullough, 2011) and 9% decrease in skiers has been detected in 2010 (VisitScotland, 2010). In Switzerland the drop from the most successful and profitable winter 2003/04 was 5 million in 2011/12 (Vanat, 2014). Therefore, in 2012 it had been decided to identify the reasons of this significant drop by having conducted the fieldwork in both ski

resort destinations focusing only on three winter seasons. The position of the researcher and justification of the choice concurs with Pearce's point of view; hence, both Switzerland and Scotland have been chosen due to their existed similarities, for instance, in the forms of challenges and differences, in the forms of various approaches to handle the occurred or occurring challenges. The revealed coping mechanism would benefit the knowledge, increase validity and reliability of the results and become attractive for publishers and future research.

The literature review, therefore, identified that there was no commonly accepted narrow set of sustainability indicators, which could have been predominantly applied towards the ski resorts and their survival rather than their impact on the outside factors. Some authors supposed that sustainability could have been only implemented successfully if there were useful, reliable and comprehensive sustainability indicators available (Lu and Nepal, 2009).

Ski resorts in general were called the tenants of sustainability and "on their shoulders" lied the tremendous weight of responsibility to fulfil this socially politically environmentally and economically vital role, however, the significant disagreement appeared in terms of forgetting to evaluate issues of business sustainability and viability because without that the tenants might disappear at all and who is going to act as a tenant? (Phillips, 2012). Therefore, the researcher of the current thesis shifted the traditional focus towards the ski resorts primarily and conducted the interviews from that precise perspective including, of course, what had been topical and up to date in the literature, the issues related to the outside sustainability but much less than challenges connected to the business sustainability and viability of the particular ski resort in order to fill a gap in the empirical studies and academic research.

Butler (1999b, p. 16) explained that without indicators the term ST was "meaningless". There was a criticism about indicators in the academic literature: issues with scale, differing interpretations (Hughes, 2002), indicators are difficult to assess (Miller, 2001), use of indicators could also lead to over-dependence on

quantitative measures (Miller and Twining-Ward, 2005), wrong selection of indicators could lead to negative consequences on the monitoring system (Choi and Sirakaya, 2006), practical effectiveness was very low (Fernandez and Rivero, 2009); inappropriate indicators which had nothing to do with ski resorts' operations and profitability, for instance, season length (Scott, et al. 2012).

Moreover, some debatable issues still needed a further clarification, for instance, determinants of sustainability indicators prior to the selection of model of Sis; ways to maintain and increase business sustainability and viability of Scottish and Swiss ski resorts along with the comparative analysis.

This allowed developing the aims and objectives, defining the research paradigm and choosing the suitable methodology along with the research methods. The first one was connected to the ski resorts' profitability which influenced business sustainably and viability and the second one – targeted to develop a set of sustainability determinants in order to choose a model of SIs for generic ski resort use. Due to the examined scholars' positions about indicators' complexity and comprehensive orientation rather than individualistic and narrow approach and personal interpretations what has been identified as the gap, mishandling, lack of measurement became the trigger to take this further and investigate it empirically. The analysis of the academic literature, Government reports and official newspapers revealed the range of problematic implications for the ski industries of Switzerland and Scotland, with however, the lack of consensus and weighted opinions.

To reach the first aim qualitative semi-structured interviews have been conducted in Switzerland and Scotland. The researcher targeted 5 ski resorts in each country and organised face-to-face interviews among the general managers and operational managers to get a broader perspective from the ones, who were in charge of strategic planning and who experienced the day-to-day operational challenges. The forecast of overall 10 interviews was approximate because at that stage predictability depended on the saturation point to be reached. The face-to-face interaction lasted around 30 minutes. The interview data has been recorded, transcribed verbatim, arranged

according to the broad themes, imported and coded using NVivo. The second aim of this research was to develop a set of determinants prior to the selection of a model of relevant indicators for generic ski resort use. Delphi was suited to achieve that. Prior to the first round of the Delphi the pre-test of the study has been organized. Thus, the aim of the Delphi was to narrow down and weight the determinants for sustainability indicators model. The results from the quantitative approach have been analysed using SPSS software that allowed contributing individual variables to the solution and the research objectives (Baggio and Klobas, 2011).

6.3 Phase 1 – Conclusions and Contribution

Findings from the Phase 1 of this research has determined that with regard to sustainability and its pillars the general opinion of the interviewees was the following: all of them have definitely heard the term 'sustainability' before, except for one participant, who had known nothing about it or very little. They were aware of its existence, however, the understanding was different and the interpretation was sometimes incomplete or too abstract. Some of the interviewees did not comprehend the key components of the term sustainability or recognized only one of the pillars of sustainability (the environmental pillar). One of the participants separated the term sustainability and business sustainability. However, the raw data revealed the poor understanding of the concept from the point of few of some managers of Scottish ski resorts and the unequal treatment of the pillars of sustainability. Whereas, most of the Swiss ski resorts respondents were clear about the concept but additionally demonstrated the tendency to interpret the term in a very different manner with regard to Davos as a destination and its historical plus traditional background.

The first aim of the thesis was:

- To determine and analyse the factors as actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice.

The aim was successfully addressed and, therefore, the First Phase of the research has a few original contributions to the field of knowledge, which will be demonstrated below.

6.3.1 Internal Sustainability (New Interpretation)

An original contribution to the field of knowledge was made through the entirely different approach towards the word "sustainability" in relation to the internal Business Sustainability (Figure 2-3). That view has been demonstrated by all Swiss ski resorts except for one. As if in unison they tend to view sustainability in a completely new manner and focus on the elements, which most of the academic literature fails to acknowledge or even deliberately ignores its significance for a ski resort destination. The attempts to look at the concept comprehensively reduce the chances of noticing the specifications of a certain ski resort destination (Gibson, et al. 2005; Gibson, 2006; Pope, 2006; Morrison-Saunders, 2006). A vivid example of the distinguished notion derived from the findings – Swiss ski resorts and their connection to Davos itself, its history and heritage. Sustainability has 150 years of tradition and tradition is linked directly to sustainability. If there is a heritage to be, it should be taken care of and maintaining traditions, image and quality is sustainability. Remarkably, but one researcher always linked Davos and its history (Naumann, 2005). For Davos as a former place, where people came to cure tuberculosis, it is important to carry on its legacy and reinforce another image as a ski resort destination. Focusing traditionally on a slow mountain is their competitive advantage and key element of sustainability for that specific ski resort. Regarding the vital role of traditions one Scottish ski resort manager enthusiastically shared the details of their 50 years anniversary of skiing. In addition, the so-called formula *sustainability equals traditions* has received a development in terms of *price*. Switzerland is a small country and it is an expensive country and therefore, it is by the definition of tradition stands for high values and high values equal high price, therefore, sustainability has a price too.

Thus, Swiss ski resorts in Davos are not oriented towards the masses and traditions for them equal sustainability. In addition, "the concept of the cheapest" is not the concept of the sustainability for Swiss ski resorts with one deviated opinion expressed with a possibility to reduce a price if situation gets very challenging.

6.3.2 Pillars of Sustainability

This thesis assisted to shed a light on the debatable concept of the sustainability pillars. Liu (2003, p. 460) encourages finishing "a sematic debate about terminology" and focusing on "sustainability trinity" (Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007) or "three legs of sustainability" (UNWTO, 2004; Newport, et al. 2003, p. 357), or in another words - three-dimensional triple bottom-line of sustainability (Smith and Sharicz, 2011). In practice it seemed that for one destination an influence of one of the TBL components has been more significant, for instance, a dependability of a resort from the weather (especially Scottish ski resorts), for another - the economic element is worth a major consideration due to the strength of Swiss Frank and a larger percentage of foreign customers (mostly for Swiss ski resorts). Hence, due to the nature of a ski resort, its agenda and external factors the balanced approach is still a challenge to maintain. Nevertheless, during the interviews in Switzerland and Scotland all elements were equally treated despite a potential predominance of one over another.

A special emphasis has been made towards the importance of local people (as the social pillar of sustainability) and *the organic connection* between people and skiing, which reinforces the existed academic position with regard to the components of sustainability. The social element of the "sustainability trinity" (Harrison 1996; Farrell 1999; Farrell and Twinning-Ward, 2005; Becken and Hay, 2007) appeared to be of high significance. A duty and expectations from the locals to preserve the mountain is among the main priorities of the ski resort. Local inhabitants play the key role not only because most of them are being recruited by the ski resort (like in Scotland), but also because there is an organic connection between people and skiing

(in Switzerland). The empirical data from Scotland and Switzerland reinforced the role of the local people (Meier and Wille, 2011).

6.3.3 Additional Barriers of Sustainability

The interviewees were asked about the barriers of sustainability in general or barriers of business sustainability (viability), which had an impact on profitability of the ski resorts. It corresponded directly with the first aim of the research. Everyone confirmed seasonality as the barrier of sustainability. With regard to seasonality for all ski resorts snow plays a vital role because they are all the winter sports destinations. However, the complexity of barriers has been recognized by some of the respondents, but with a different scale of importance, for instance, some named 'snow' as the definite barrier, one mentioned also 'a strong wind", another above all – rain and another less important barrier – Rugby weekends that keep customers especially the entire families away from skiing. An interesting interpretation was given towards *the unity of snow and sustainability*. Some participants stated that nobody could forecast whether it would be a lack of snow or too much snow and this statement is already sustainable. People's unawareness or presumption with regard to the weather is sustainable, which required, without any doubt, applying adaptation strategies to stabilize the winter season. In the aggregate with snow another challenge was a strong wind, which by nature blew away the snow cover. To fight that force of nature ski resorts in Scotland needed a snow fencing (that issue is typical only for Scottish ski resorts).

Another barrier of sustainability recognized by all the interviewees was the exchange rate. However, the Scottish ski resorts being predominantly dependable on the local customers but not the foreigners were concerned about the exchange rate, logically and understandably, less. For Scottish ski resorts the absence of tracking systems was a challenge too. Comparing with the Scottish ski resorts the entirely diverse attitude towards the exchange rate barrier has been expressed by all Swiss ski resorts regardless the local customers' orientation and all admitted the strength of Swiss Franc over another currency, which had two-sided affect. Some of them named this barrier to be of a high significance. Thus, not only the exchange rate demotivated

and, as a result, prevented foreign tourists to come skiing to Swiss ski resort, but also drove away Swiss customers to spend their holidays abroad due to the cheap prices caused by the other currencies' fluctuation.

A next barrier of sustainability indicated by the ski resort managers was competition. It was not surprising to notice that the position of Swiss ski resorts was frequently similar regardless of the matter and this view about the competition was not an exception. It could be explained by the ownership specification. There are 6 ski resorts in Davos but 5 of them are run by one company, one management team and autonomy of every ski resort is in a way fictional. There is one general manager and 5 assigned representatives emplaced with the strict subordination to the company and general manager of the company. In line with the aforesaid, some interviewees listed a few other barriers like the health system change, which impacted on the decline of visitors.

Another barrier - the official closing of the Government programs to support skiing among children, which used to be compulsory in Switzerland. In addition, the cultural diversification played a negative role for skiing. In every school a proportion of local Swiss children decreased and the foreign children, who are not originally Swiss, unfortunately, did not share the same passion for winter sports. Therefore, the decline of young people has continuously progressing due to described reasons. The same opinion but with the slightly different angle was expressed by the Scottish ski resorts' managers. They highlighted the need to use incentives with the Government support for children to ski more in Scotland. All participants agreed 100% that there are ways to overcome the indicated barriers in the forms of strategies, but demonstrated different approaches.

Another challenge that requires to be addressed is climate change. In relation to the ski resorts of Scotland this issue is a reality and there is a potential menace for skiing in Scotland to be 'climatically marginal' activity (Howie, 2003). The empirical data has also shown that. Mountain areas are sensitive to any changes of the weather. Implications of that might be, for instance, less snow, too much snow, receding

glaciers, melting permafrost (the permanent solid layers of ice) and landslides. A climatic component is only one of many prerequisites influencing snow tourism in particular ski resorts, as the snowline recedes (Cooper et. al, 1998; Pozzi, 2011).

A next barrier of sustainability indicated by the ski resort managers was competition. The crucial issue connected to competition is collaboration even with competitors for mutual benefits (Del Matto, 2007; König and Abegg, 1997; Thorne, 2006; Scott and McBoyle, 2007), which is in practice, poorly done. With regard to ski resorts of Switzerland the main competition is not between Davos and St. Moritz, St. Moritz and Davos, Swiss ski resorts and the Austrian ski resorts. The main competition is the Mediterranean Sea and the mountains. That is the main decision people have to make especially in winter, when they wonder – do we want to spend holidays in the mountains or do we fly for 300 euros to Turkey including flights, 4 stars hotel for 7 days and only for 300 euros. The key issue, which is often not given enough attention in the academic literature, is a competition of winter destinations and summer destination and this is another contribution to the field of knowledge.

To sum up, the clarification of barriers of sustainability could be applied to a wider sustainability literature by looking at actual and potential barriers and ways to overcome them in order to maintain a sustainable business practice. The actual barriers and potential barriers are very connected and actually are entwined with each other because most of them have a repetitive sign. Due to their tendency to repeat ski resorts could think of the strategies to overcome and reinforce their sustainable business practices.

6.3.4 Adaptation Strategies: Theory Vs Practice

The first debatable adaptation strategy revealed to be the marketing approach in order to survive and increase profitability. For all Swiss ski resorts one of the most important strategies to overcome any barrier and stabilize business was events especially in the Congress Centre like in Switzerland. Those are the guaranteed customers, who would definitely come and thus, according to the respondents, was

and would be sustainable. When the researcher asked one of the participants, whether they apply or plan to apply any innovative or adaptation strategies the reply was very short and paradoxical in terms of misinterpretation of the strategies' goals, conditions and more importantly, time frame. The response has indicated a lack of a clear notion with regard to when the strategies are needed: with lots of customers on the premises or during the period of ski resorts business hiatus.

Another strategy for ski resorts, which operate all year round or at least try to operate, was summer activities and special packages. The so-called substitute of skiing for some ski resorts and an additional source of income when there was the snow deficiency or for some - summer activities only were walking tours. The practical implications of summer activities are much more challenging than the academic literature states (Sub-chapter 5.2).

Snowmaking, as the strategy to sustain the ski resorts business, has both advantages and disadvantages especially for the Scottish ski resorts. Most of the ski resort is Switzerland tend to use an estimate of 30% of a technical snow.

Advertising an adaptation strategy seems to be an expensive strategy and all the respondents confirmed that.

6.3.5 Critical Reflection on Theory and Practice

This thesis contributes to the field of knowledge by a critical reflection between theory and practice. Recent commentaries such as those of Hall (2008a), Scott (2008) and Scott and Becken (2010, p.286) revealed that "the awareness phase" has changed and converted into the stage when the scholars were concerned about the resorts and their operation, which had been proven by the higher percentage of academic articles. In line with that, one of the research questions examined whether "the awareness phase" existed in practice and if it did, and the managers of ski resorts were concerned, what the targeted ski resorts in Scotland and Switzerland thought about tourism and sustainability. Most of the Scottish ski resorts' managers have

heard about the concept of sustainability, however, their interpretation of it has demonstrated quite an opposite: they simply wanted to make sure that they wouldn't rely on snow and would always have enough trade to keep going. In contrast, there was a statement of confidence based on zero evidences, that there would always be a demand for skiing in Scotland. In addition, according to the same opinion good years would cover the bad ones. It contradicts with the proposition that ski resorts managers nowadays tend to rely on "the axiom that both the tourism industry and, and sustainability, are real-world phenomena (Buckley, 2012, p. 529).

The perception of some Scottish ski resorts managers was not even close to the acknowledgment and far beyond understanding not only the concept of sustainability, but also the realization of a possible lack of demand in a future. It seems that even the previous years, where their ski resorts struggled to survive, were not the trigger for them to even accept some challenges. With regard to that, it is inadequate and unrealistic approach for any destination to presume that there will be always an increasing demand for its product despite any changes in the tourist market (Liu, 2003) especially considering the fact that ski resorts in Scotland are directly connected to the weather conditions and are winter –based destinations (WTO, 2003; Scott et al. 2006).

6.3.6 Business Sustainability – the Filled Gap

One of the most significant and original contributions to the field of knowledge was made towards the concept of business sustainability and viability (both during the first and second phases of the research). Business sustainability has been the reason of the endless debate and the search of the consensus in the literature review section because in most of the cases the academic literature is limited to the angle of external sustainability, perceptions of visitors towards sustainability of ski resorts ignoring completely developing a discussion and conducting a fieldwork towards the internal sustainability, which the researcher defines as the inner (business) sustainability or viability for ski resorts to survive in a long run. The researcher of the current thesis shifted a traditional focus towards the ski resorts primarily and conducted the

interviews from that precise perspective including, of course, what is topical and up to date in the literature, the issues related to the outside sustainability but much less than challenges connected to a business sustainability and viability of a particular ski resort in order to fill a gap in the empirical studies and academic research. The findings uncovered a clear separation of the terms by all ski resorts managers, for instance, when they talk about ski resorts operation based on green principles (this is about an external sustainability) and when the strategies should be applied in order to make enough money to keep them solid for the whole year (it is about business sustainability). It might be logical to presume, that for the ski resorts survival is connected to its business sustainability and viability and is the first priority.

Overall, all ski resorts managers implied business sustainability while addressing the questions related to the barriers of profitability and adaptation strategies. In the literature Müller (et al. 2010, p. 28) operate with the term 'rejuvenation strategies" to prolong a winter destination life cycle by analysing a competitive environment with all its obstacles. What the authors call business rejuvenation in this thesis is named as business sustainability in the form of its viability due to their identical meanings. In addition, Bullough (p. 41, 2011) noted that 'there is a need to secure a sustainable business model in ski resorts' which will benefit ski resorts' viability in a long run. Scott (et. al 2012, p. 191) use directly the term "business sustainability" during a discussion about climate change and its consequences for the destinations, implications for touristic activities there and the capacity of ski business to exist and survive. However, for this research a debate about components mattered only to an extent of a clear vision that sustainability in general might be interpreted as an outer (external) sustainability and inner (internal) sustainability (Figure 2 -3).

6.3.7 Lack of Adaptability – the Reinforced Gap

This research has practical applications for the tourism industry. In line with that some academic studies showed a lack of adaptability as a gap in common strategic planning for coping with the implications caused by the economic, political, environmental and social forces (Scott, et al. 2006; Scott and McBoyle, 2007

Mirfenderesk and Corkill, 2009). The findings, in fact, have vividly demonstrated and reinforced that gap; for instance, some managers were almost ready to give up facing the same challenges every year and refusing to even develop a plan or a strategy to eliminate them. Some of them accuse the Scottish weather and its unpredictability as the main reason preventing them from planning ahead, albeit that should be exactly the trigger and incentive to create alternative solutions, contingency plans or adaptation strategies. The events are planned in advance (5 years plan), which according to their words is planning, but "more hope than knowing for sure". On the one hand, making a forecast of complications is difficult in the countries, where the weather conditions are linked inseparably to the business itself (Wittneben and Kiyar 2009). On the other hand, the action is needed even more with the challenges ahead (Kokkranikal, et al. 2003; Patterson, et al. 2006; Frochot and Kreziak 2008; Filho 2009). An incapability to take proactive actions for the long-term growth might lead towards a loss of financial stability and internal sustainability of a ski resort (Vanat, 2014), which is exactly the case among Scottish ski resorts. It could be concluded that ski resorts in Scotland had demonstrated their passive behaviour and lack of adaptability towards every day changing environment and their words had very frequently contradicted their actions. Regrettably, they have admitted that repercussions of not planning ahead lead to an inevitable revenue loss but they still "chant their mantras and sit in their caves" and don't behave proactively (Watson, 2001, p. 386). An original contribution to the field of knowledge was made by an innovative effective managerial approach, which allowed adding another perspective to the existed theories about adaptation strategies (planning) and their time frame.

Thus, an entirely different approach has been taken by the Swiss ski resorts managers: not only they are successfully involved in planning, but they are actively and enthusiastically involved in it. They are engaged in making deals until the year 2021. Their justification of such a long term planning is to overcome any future economic, political, environmental obstacles by arranging the deals in advance. The researcher suggests an assumption – strategic planning might lead to sustainable

business practice and that could mean that any managerial approach should be proactive to be truly sustainable (Spangenberg and Bonniot, 1998).

6.4 Phase 2 – Conclusions and Contribution

After three consecutive rounds of the Delphi Study the sustainability determinants for generic ski resort use were examined and filtered in order to measure business sustainability of ski resorts. As it has been demonstrated in the literature review sections, the complexity of sustainability models, uncertain unclear and broad criteria of indicators and lack of empirically generic approach were those debatable issues that needed to be addressed. The second aim of the research was:

- To develop a set of sustainability determinants for generic ski resort use.

The aim was successfully addressed and, therefore, the Second Phase of the research has also contributed originally to the field of knowledge, which will be demonstrated below.

6.4.1 Part 1 - Contribution to the Definitions

Like the data from the interviews, Delphi findings have also contributed significantly to the concept of business sustainability. The first part of the First Round contained the most debatable question, as it has been demonstrated earlier, about the external and internal sustainability, sustainability indicator and model. The basic understanding and consensus of the investigated phenomena was reached. The following definition was offered to the Delphi Panel - "A sustainability indicator is a variable which can take a certain number of values (statistical) or states (qualitative) according to the circumstances (temporal) that influence or might influence sustainability" (Dubois, 2005, p. 141). The personal interpretation has been also provided by the researcher being guided by some academic scholars' opinions. Thus, a model of SIs for any ski resort destination is a tool that can be applied to a long

term strategy which measures and weights not only the outer (external) sustainability with all its components (politico- economic, socio-cultural, environmental), but also the inner (internal) sustainability of a ski resort towards its business sustainability and viability (Harrison, 1996; Clark, et al. 2006; McCrum, et al., 2009; Bullough, 2011; (Morrison and Pickering, 2013). The proposed elements to the definition, which reached the MEAN score 4.00 or above (Table 4.2.2), indicate that experts either agreed or strongly agreed (over 80%), the consensus was reached and the definitions have to be altered accordingly.

The working definition offered by Dubois (2005) had to be altered and expanded due to the fact that the Delphi Experts have all reached their consensus after three rounds and also offered and agreed upon the new components. Both the temporal and spatial scales reinforced their relevance and validity as the components of the original definition. In addition, according to the experts' opinions sustainably indicator has to help to illustrate areas, where more policy action is needed and inspire policies to apply corrective measures and also to evaluate current policies. However, Weaver (2008) acknowledges policies as a factor of relevance in terms of sustainability of ski resorts and its measurement. He also claims that the challenge is to adopt the policies in practice and identify which formulas to use. Nevertheless, other factors have to be taken into consideration while implementing certain policies, like financial constraints, stakeholder interests, level of public support and politics. In might sound logical in theory but from the critical point of view and regarding ski resorts managers new policies and its impact have to benefit mainly a ski resort and their business sustainability. Therefore, such components like stakeholders' interests, public support and politics will be less significant for a ski resort rather than, for instance, potential restraints while implementing a certain policy to measure sustainability. Thus, the proposed equal treatment of the components might not necessarily be equal and might depend on who is going to implement policies and its purpose. The purpose could be to help to make a diagnosis and monitoring of the information collected that is why SIs can be used as instruments and techniques for planning and managing the ski destinations.

The Delphi results also revealed and validated that sustainability indicator should be a strong proponent of sustainability and the model needs to be broken down into economic, environment and socio-cultural elements with different criteria for indicators in each. The academic literature confirms that too emphasising on the need to develop more comprehensive sustainable tourism indicators that can build a connection between tourism and TBL of sustainability (Inskeep, 1991; Butler, 1993a; Coccossis, 1996; Dymond, 1997; Goodall and Stabler, 1997; Mowforth and Munt, 1998; Weaver, 1998; Swarbrooke, 1999; Weaver and Lawton, 1999; James, 2000; Miller, 2001a).

Moreover, Butler (1999b, p. 16) states that without indicators the term sustainable tourism is "meaningless". With regard to that the Delphi Experts also agreed with the literature demonstrating that SI should be based on a process of sustainability assessment that directs decision-making towards sustainability and provide useful information enabling sustainability direction and progress to be determined. A concern rises by defying what "enabling sustainability direction" means and how long it takes to reach sustainability by using the sustainability indicators. It takes a long period of time to be positive about any activity to be called sustainable (Butler, 1996) and it is a subjective process unless it is based on an aggregate of objective characteristics, such as indicators. Indicators are needed to monitor if standards are being followed. If not, management actions might be required to detect any violations. The suitable indicators are those that respond to the threats regarding sustainability (UNTWO, 2004a). Indicators can help destinations determining their sustainable tourism objectives, establish and track progress and identify long-term strategies for future (McCool and Lime, 2001). In conformity to afore mentioned, the Delphi Experts agreed that sustainability indicators identify strengths and weaknesses of the ski resort management, which is directly related to the progress tracking. SI should correct negative impacts. Nevertheless, a wrong selection of indicators can lead to negative consequences of the monitoring system (Choi and Sirakaya, 2006).

The original contribution to the field of knowledge has also been made towards *the shift in the scale of sustainability indicators*. Lu and Nepal (2009, p. 13) highlighted that over the period of 15 years the scale of SIs has shifted from "project-oriented" to "destination-oriented", which demonstrates the trend of their generic use. According to the Delphi findings sustainability indicators should be linked to the dynamics of the main elements of a resort over time and reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability. The SI should also illustrate the level of performance. Indicators are measured to discover standards of quality like the level of performance (Manning, 2011). Sustainably Indicator is a benchmark to compare between regions and resorts. It also should provide useful information on a sustainable performance of a ski resort. All of these indeed validate the shift from "project-oriented" to "destination-oriented" and with regard to regions and resorts SIs can provide an instrument for monitoring and comparing progress realized in regions and resorts.

It has been confirmed by the Delphi Experts that sustainability indicators should acquire meaning in a system as a whole and must be interpreted within some values/data of reference and not only be used for the conventional tourism purposes such as arrival numbers, length of stay and tourism expenditure (Ceron and Dubois, 2003) or season length (Scott, et al. 2012). The latent author claims that inappropriate indicators such as season length, for instance, have nothing to do with ski resorts' operations and profitability. However, the season length has a direct influence on ski resorts' business sustainability, its operations and profitability. The Delphi Experts also offered to include economic viability to SI due to the facts that many factors have an impact on ski resorts profitability and season' length is one of the most significant (Findings 4.3.5). It also correlates to the need "to secure a sustainable business model in ski resorts' which will benefit ski resorts' viability in a long run" (Bullough, p. 41, 2011).

To sum up, the nature of the Delphi technique assisted to reach the consensus regarding the definitions of sustainability indicators, model and business sustainability of ski resorts. The subsequent sections elucidate which determinants in

the form of adaptation strategies should be taken into account prior the selection of the suitable model of SIs. They also critically address the internal dilemma of a ski resort being dependable on weather conditions and demonstrate the validated experts' opinions. The Delphi Survey results have also contributed to the debatable solutions in the academic literature such as cancellations of ski business as a strategy, the implications of investing in snow fencing and many others which influence ski resort business sustainability and viability.

6.4.2 Part 2 - New Framework

The second part of the Delphi Survey aimed to filter and weight the selectively chosen adaptation strategies or determinants which had been of high importance prior to selection of a suitable model of sustainability indicators based on the academic literature. The new framework (Figure 4.2) contributed to the field of knowledge by narrowing down the adaptation strategies according to the themes.

Adaptation strategies or determinants for a ski resort with regard to the changing environment were validated and reached the consensus such as:

- An artificial snow making
- Development of higher terrain
- Cooperation with other ski resorts
- Alteration of time to ski during the season

Adaptation strategies or determinants for a ski resort with regard to the changing in government polices about sustainability were validated and reached the consensus such as:

- New policy adaptation
- Cooperation with another ski resort and implementation of new policies in collaboration
- Alteration of time to ski during the season

Adaptation strategies or determinants for a ski resort with regard to the changing in economic climate were validated and reached the consensus such as:

- Cooperation with another ski resort
- Non-snow related activities
- New marketing strategies
- Revenue diversification

Adaptation strategies or determinants for a ski resort with regard to the changing in socio-cultural environment were validated and reached the consensus such as:

- Reinforcing inhabitants' engagement
- Cooperation with another ski resort
- Non-snow related activities
- Public education

Adaptation strategies or determinants for a ski resort with regard to the changing in technology were validated and reached the consensus such as:

- An artificial snow making
- Investing in easiness of transportation
- Staff training
- New marketing strategies
- Public education.

To sum up, a new filtered and weighted set of sustainability determinants aims to increase ski resorts business sustainability and viability.

6.4.3 Recommendations

The collected and analysed data allowed developing recommendations for all stakeholders. In order to maintain and increase ski resorts business sustainability **ski resorts generally** could:

- Collaborate more with each other
- Invest more in marketing (locally and internationally)
- Develop and implement new innovative strategies
- Engage local inhabitants both for work and as customers
- Use an artificial snow making in order to sustain winter season
- Provide public transportation for customers in remote areas
- Develop a strategic plan for a long term
- Improve a system of tracking customers and analyse their profiles
- Cooperate more with tourism information centres
- Cooperate with government not only in terms of subsidies
- Engage younger customers by providing inceptives for them
- Organise more events to attract a different segments of customers

A comparative analysis of the Scottish and Swiss ski resorts revealed that both ski resorts destinations could benefit from each other's strategies to overcome actual and potential barriers of sustainability in order to maintain and reinforce sustainable business practices. The recommendations for the **Scottish ski resorts** could be:

- To establish a better communication with each other and collaborate more
- To use various marketing tools in order to attract customers
- To arrange deals with local nearby accommodation facilities
- To increase collaboration with VisitScotland
- To develop programs with the government for young people to promote skiing

- To create a united tracking system in order to develop loyalty programs and maintain accurate customers' profiles (to know *"not only faces, but also names"*)
- To arrange transportation for customers because Scottish ski resorts are located in the remote locations
- To invest more financial resources in snow fencing
- To organise "guided walking tours" in the most dangerous areas
- To develop further mountain biking
- To decrease queueing time for lifts
- To implement more frequently "walking express" tours by bicycles
- To organise summer activities
- To behave proactively in terms of a future strategic planning of events which will reinforce the Scottish ski resorts business sustainability.

The recommendations for the **Swiss ski re**sorts are:

- To collaborate with the public institutions and government in order to attract more young people for winter activities
- To offer incentives for young people
- Due to the fact that the Health Systems was altered, to arrange contracts with hospitals (directly or indirectly via clinics in Davos) to gain patience for rehabilitation purposes
- To be more flexible with price and offer more discounts like "Davos Klosters inclusive" and not only during summer
- To negotiate a better exchange rate (for instance, in a local bank, like UBS) for foreigners due to the strength of Swiss Frank)
- To arrange more accurate tracking system
- To diversify summer activities as substitutes of skiing
- To create strategies to gain customers from main competitors (local wise, for instance, from St.Moritz or Lenzerheide ski resorts, and international wise, for instance, from Austrian or French ski resorts)

- To engage professional people from the outside since all five ski resorts of Davos belong to one management company in order to brainstorm, develop new ideas and, hence, implement innovative approaches.

Recommendations for **government**:

- To plan an annual budget taking into consideration a financial support to a ski industry
- To change relevant laws (for instance, in Scotland ‘‘the funicular is zero-rated as a transportation system but VAT for all lift and tows is charged at the full 20% VAT rate’’ (Bullough, 2011, p. 35). Therefore, there is a need to reduce VAT rate for the Scottish ski industry, thus, saved money could be used for ski resorts needs to increase their business sustainability. It means that the concern has to be raised in Holyrood and Westminster at the legislative levels in order to make Scottish ski industry more competitive and sustainable)
- To engage public institutions and create programs that could encourage people to pursue winter sport (for instance, skiing used to be in “Swiss DNA”, however, due to the cultural diversification of mixed families, less young people pursue winter sport)
- To improve a transportation system (especially, in Scotland because ski resorts have remote locations).

The conducted empirical research allowed developing recommendations for **VisitScotland**, such as:

- To collaborate with all Scottish ski resorts
- To deliver instantly an information about weather forecast if their resources are more effective and efficient
- To provide statistical data and assist to develop a tracking system with detailed customers’ profiles

- To cooperate with a government in order to create programs to support ski industry in Scotland
- To redistribute own financial resources to support Scottish ski resorts if possible
- To increase participation in advertising and marketing (locally and internationally) to promote Scottish ski industry
- To organise meetings in order to develop strategic planning of events.

The comprehensive analysis of the data allowed proposing recommendations for **Graubünden Tourism**, such as:

- To continue collaboration with ski resorts of Davos
- To engage more public institutions (for instance, schools) in order to encourage winter sport
- To continue a successful involvement in marketing and advertising to promote Swiss ski industry
- To organise meetings in order to develop strategic planning of events
- To provide statistical data and assist to develop a tracking system with detailed customers' profiles
- To cooperate with a government in order to create programs to support ski industry in Switzerland
- To redistribute own financial resources to support ski resorts of Davos if possible

6.5 Limitations

As any other research, this conducted study encountered some limitations and, therefore, they should be acknowledged and taken into account.

Originally 10 interviews were supposed to be organised – 5 in Switzerland and 5 in Scotland. Unfortunately, despite two attempts to collect a raw data from a representative of the Nevis Range ski resort of Scotland, collaboration did not take

place. The researcher sent a few emails trying to arrange a face-to-face interview and even drove all the way to the Nevis Range, where, sadly, was explained that the manager was too busy to be involved in such a research project. The final attempt was pursued and the marketing manager has been contacted to arrange an interview and after a long correspondence only Nevis Range report has been provided by email. Hence, the data from the Nevis Range ski resort is acknowledged to have a limitation and treated as the secondary data only in the form of the provided report.

Another limitation identified was the realisation that the interviews in Switzerland were not the English speakers and might have faced difficulties while understanding a question and replying.

There is a debate in the academic literature with regard to the sample size of the Delphi. According to the Delphi studies from the period of 1973-2005 the sample size of the engaged participants varied paradoxically from only 4 experts to 171. There is no right or wrong number and also no methodological rigor with regard to the Delphi. As long as the research question has been answered and hence, the consensus was reached, limitations have been openly acknowledged, a justification of a smaller and larger scale is not that significant. Moreover, a small sample of between 10-15 experts may yield sufficient results. There were precedents when out of 45 engaged experts only 3 provided a comprehensive analysis, dedication and triggered a modification of an existed system. It happened due to the lack of appropriate expertise of other 42 members and, obviously, from the personal point of view, due to a critical error of the researchers during the most crucial phase of the Delphi – a selection process (Lam, et al. 2000, p. 10 cited in Skulmoski, et al. 2007). The Delphi process has no dependency on a statistical power. Its significance consists on a group dynamic to reach consensus. Up to date literature recommends the panel from 10-18 experts (Balasubramanian and Agarwal, 2012). To reinforce an occurred position the researcher displayed those Delphi published research, where the sample size was 4-12 participants: Gustafson (et al. 1973) with only 4 experts and 2 rounds, Nolan (1994) with 11 experts and 3 rounds Nambisan (et al. 1999) with 6 participants and 3 rounds, Lam (et al. 2000) with 3 experts and 3 rounds, Shuman

(2000) with 12 experts and 3 rounds, Friend (2001) with 8 experts and 3 rounds, Vazquez (2003) with 12 members and 3 rounds, Wynekoop and Walz (2005) with 11 experts and 3 rounds. The crucial point is that the consensus has been reached after three rounds justified by the SPSS analysis.

The researcher acknowledged a potential contradiction of the commonly spread theoretical assumption that quantitative methodology produces general results based on a big scale of a sample size. Therefore, one may argue that 12 Delphi participants are a small sample size for the quantitative stance. Nevertheless, an emphasis has to be made on the nature of the Delphi technique as being not entirely qualitative or quantitative but a combination, 'hybrid' or 'synthesis' of both methodologies. Some authors call it mixed-method Delphi (Skulmoski, et al. 2006). Building a logical connection here an assumption can be made that common philosophical and methodological rules might not be applied here comprehensively but with certain deviations and exceptions.

Moreover, with the Delphi questionnaires the experts may have been based their responses on how they presumed the survey should be answered rather than on their own opinions. It might have been better if the initial questionnaire were shorter, which actually happened after the second round.

6.6 Areas for Future Research

This research could become a foundation for a future research in business sustainability of ski resorts, adaptation strategies, sustainability indicators, actual and potential barriers of ski resorts' viability. Using the outcomes from the conducted study researchers may investigate more comprehensibly challenges with regard to ski resorts, ways to cope with them in order to maintain and reinforce sustainable business practices. Therefore, a further empirical research will contribute to the field of knowledge and allow developing, implementing adaptation strategies for ski resorts' business sustainability and viability.

The second part of the Delphi Survey aimed to filter and weight the selectively chosen adaptation strategies or determinants which had been of high importance prior to selection of a suitable model of sustainability indicators based on the academic literature. The Delphi study assisted to find a compromise. It validated adaptation strategies and determinants for a ski resort with regard to the changing environment, changing in government polices, changing in economic climate, changing in socio-cultural environment and changing technology could be tested further. Based on the results, a longitudinal study could be conducted with a focus on other adaptation strategies and sustainability indicators.

More research is required in order to evaluate the discovered interconnections of objective and subjective factors of sustainability and its elements in relation to ski resorts. Another potential area for further research might be an investigation of potential impacts of changing environments, which might influence the profitability and sustainability of other ski resorts destinations.

This research has focused upon two ski resort destinations: Scotland and Switzerland. The followed up explorative investigation might be carried on emphasising on ski resort business sustainability and viability rather than only sustainability in general in different ski resorts destinations to obtain more generalizable data.

Last but not least, future research could explore more, which ski resorts destinations measure their business sustainability using similar criteria of sustainability and applying effectively the same or different adaptation strategies as this research has demonstrated.

6.7 Concluding Comments

Ski resorts around the world still face a number of challenges. Moreover, there is a diversity of factors that influence or might influence profitability and sustainability of ski resorts (Vanat 2014). In order to maintain and reinforce ski resorts business

sustainability and viability ski resorts destinations need to adapt, behave proactively and apply innovative strategies.

This research has achieved its aims and objectives. The factors as actual and potential barriers for the ski resorts in Scotland and Switzerland have been successfully determined and analysed. The interconnections of objective and subjective factors of sustainability and its elements have been discovered and potential impacts of changing environments, that might influence the profitability and sustainability of Switzerland and Scotland as the ski resort destinations have been investigated. A novel concept of "internal business sustainability" was developed. The researcher reckons that the findings could be helpful to enhance sustainable practice.

The Delphi Study has developed a new framework (a set of sustainability determinants in the form of the adaptation strategies) for generic ski resort use. All of them were identified, examined, evaluated and filtered during three consecutive rounds, which show their validity because the experts have obtained their consensus. The new framework is a significant and original contribution to the field of knowledge and could be used for a future selection of a model of sustainability indicators.

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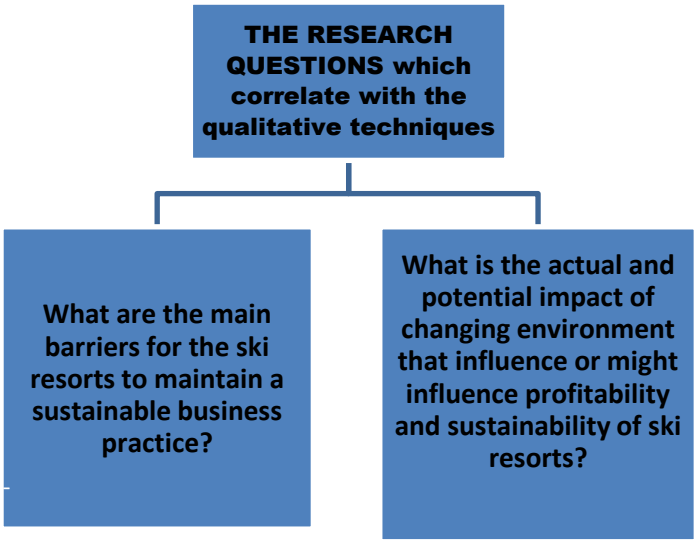
Appendices

8.1 Appendix 1 - The Interviews' Questions



Theme number 1

Barriers for sustainable business practice:

- Could you please share with me how the last three winter seasons here were?
- How did you cope with the challenges?
- As a ski resort operation learning from the past three seasons' experience do you think what will be the most potential barrier to sustain business in future?
- How do you define word "sustainability"?
- Do you start developing your strategic planning for the next season?
- What is a timeframe of your planning period?
- What do you think about the statement that in order for any ski resort to be sustainable some innovative strategies need to be developed?
- In terms of customers' satisfaction do you implement any innovative programs or plan to implement in order to sustain your business?
- Which of the following three components of sustainability (environmental, economic or socio-cultural) from your point of view should be given priority number one for the ski resorts and why?
- Is seasonality considered to be a challenge for your ski resort?
- Are you the whole year round ski resort?
- Let's just imagine for one moment if winter period becomes shorter what will you do?
- Do you have any contingency plan or adaptation strategy in case of an emergency in order to attract more customers or at least maintain your current position to have the ski resort running rather than shutting it for awhile?
- What was the most memorable irrational solution generated by your staff or management team due to the occurred challenges over the past three years?

- What mechanisms do you use to analyze your previous ski resort season's outcomes?

Theme number 2

The impact of changing environment on profitability and sustainability:

- What are the external factors you have to consider while planning the next year budget?
- Do those factors mostly repeat each year? It is possible to sustain it?
- Over the past years how did the weather conditions influence the profitability of your ski resort?
- As a long term plan, what kind of solution can be generated to cope with the changing environment?
- Do you engage inhabitants of your ski resort destination in daily operation? Is it sustainable (social component of sustainability)?
- Do you consider your ski resort to be converted into all year operation if the generated revenue is below the expected one?
- Do you cooperate with the local Government to sustain your business?
- How do you measure your performance?
- Are you aware of any new upcoming polices or sustainability programs?
- How do you use the generated net profit and how will you use it in future considering the changing environment?
- What is your loyal customers' percentage?
- Do you think loyalty program is one of the forms of sustainability?
- Did you experience a snow deficiency?
- If yes, in terms of expenses and profitability in a long run is it worth investing into artificial snow and have no dependency on weather conditions in future?
- How did the economic element like currency exchange rate impact the arrivals numbers?

8.2 Appendix 2 - Core Indicators of ST

Table Core Indicators of Sustainable Tourism

INDICATOR	SPECIFIC MEASURES
Site protection	Category of site protection according to IUCN* index
Stress	Tourist numbers visiting site (annum/peak month)
Use Intensity	Intensity of use – peak period (persons/hectare)
Social Impact	Ratio of tourists to locals (peak period and over time)
Developing Control	Existence of environmental review procedure of formal controls over development of site and use densities
Waste Management	Percentage of sewage from site receiving treatment (additional indicators may include structural limits of other infrastructural capacity on site such as water supply)
Planning process	Existence of organised regional plan for tourist destination region (including tourism component)
Critical ecosystems	Number of rare/endangered species
Consumer satisfaction	Level of satisfaction by visitors (questionnaire based)
Local Satisfaction	Level of satisfaction by locals (questionnaire based)
Tourism Contribution to Local Economy	Proportion of total economic activity generated by tourism only
COMPOSITE INDICES	
A. Carrying Capacity	Composite early warning measures of key factors affecting the ability of the site to support different levels of tourism
B. Site Stress	Composite measure of levels of impact on the site (its natural and cultural attributes due to tourism and other sector cumulative stresses)
C. Attractiveness	Qualitative measure of those site attributes that make it attractive to tourism and can change over time

* Source UNWTO 1996.

Mountains

ISSUE	*INDICATORS*	*SUGGESTED*

		MEASURES
Loss of flora and fauna	Reproductive success of indicator species	Species counts Changes in mix of species
	Continuing presence of wildlife at traditionally occupied sites	Number of road kills of specified Visual inspection and photographic record**
Erosion	Extent of erosion caused by tourists Rate of continuing erosion	% of surface in eroded state visual inspections and photographic record
Lack of access to key sites	Length of vehicle line-ups	number of hours spent in vehicle cost of entry/lowest average local wage
Lack of solitude	Consumer satisfaction *	number of people at peak period (accessible area only) questionnaire on whether solitude objectives met
Loss of aesthetic qualities	Site attraction*	visibility of human presence (e.g. litter counts)
Diminished water quality	Pollution counts	measures of faecal coliform, heavy metal

* Source UNWTO 1996.

8.3 Appendix 3 - Professional Profile for Delphi

Investigating Resort Business Sustainability: a Comparative Study of Scottish and Swiss Ski Resorts

Daria Zorina
School of Arts, Social Sciences and Management, Queen Margaret University,
dzorina@qmu.ac.uk

Daria Zorina is a lecturer at Udmurt State University of Russia delegated to Queen Margaret University of Edinburgh to take a PhD in the field of Tourism, Business and Management. Her research interests include the areas such as: tourism sustainability, ski resorts, marketing, sustainability indicators, environmental law and policy, tourism and hospitality, business consultancy.

Miss Zorina holds a Bachelor Degree in Civil Law, MBA in International Law from Udmurt State University of Russia, a Swiss Higher Diploma in Hospitality and Management from SSH, Switzerland; Bachelor Degree in Tourism and Hospitality, MBA in Tourism and Business Administration from Queen Margaret University of Edinburgh, Scotland, United Kingdom.

Miss Zorina is currently a PhD candidate under the supervision of Professor Andrew J. Frew at Queen Margaret University of Edinburgh. Her range of research includes investigating resort business sustainability and viability, redefining a set of predetermines in the forms of adaptation strategies prior to selection of sustainability indicators model for generic ski resort use.

8.4 Appendix 4 - Research Background for Delphi

Research Background

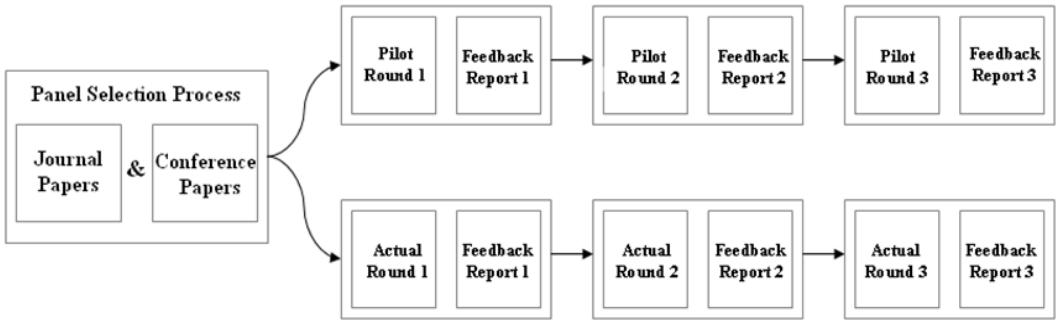
A Comparative Study of Scottish and Swiss Ski Resorts

The aims of this research are to determine actual and potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice and to model relevant sustainability indicators after certain types of determinants in the forms of adaptation strategies are being weighted for generic ski resort use. The research investigates actual and potential impact of changing environment that influenced and might influence profitability, business sustainability and viability of Switzerland and Scotland as the ski resort destinations.

Research Method

This research will incorporate two different approaches: a qualitative and quantitative. Over the recent decades, indicators-based projects used primarily quantitative tools and, unfortunately, most of them failed to connect the nature of human relationships. For the current project it was vital to involve the panel of experts (Delphi) and to conduct interviews. Thus, the triangulation of both techniques has assisted in obtaining reliable data by reducing bias. Following the convergent design under the frame of mixed methods there were two types of the collected data: quantitative survey-based data (Delphi) and qualitative interview-based data. To meet the first aim qualitative semi-structured interviews have been conducted in Switzerland and Scotland. The face-to-face interaction lasted around 30-45 minutes. The second aim of this research is to modify a model of relevant indicators by weighting the factors and criteria for generic ski resort use. The Delphi technique is suited to achieve that. The complexity of sustainability models, unclear and broad criteria of indicators and lack of empirical generic approach were those issues that need to be addressed and clarified by engaging a panel of carefully selected experts with the knowledge, experience and expertise within the area.

Delphi Process



The major criteria to select a panel were individuals' knowledge of the subject matter based upon their publication records. The researcher targeted the individuals who had delivered at least two or more presentations on systematic sustainability indicators in tourism and hospitality and general measurement of sustainability or published two or more papers in the related journals covering the period from 2005 until 2012.

8.5 Appendix 5- Invitation Email for Delphi

Dear Sir/Madam,

My name is Daria Zorina and I am a lecturer at Udmurt State University of Russia delegated to Queen Margaret University of Edinburgh to take a PhD in the field of Tourism, Business and Management. At present I am conducting a research project in Queen Margaret University, entitled – *Investigating Resort Business Sustainability: a Comparative Study of Scottish and Swiss Ski Resorts.*

I would like to invite you to become a member of a Delphi expert panel, an interactive process which does not require face-to-face participation. It employs a series of highly structured and focused questionnaires with the constant feedbacks and summaries to be provided. Anonymity will be maintained during the entire process.

Estimate duration of the Delphi will be eight weeks with a possibility of an extra round if a consensus is not reached. The outcomes and findings from every round will influence and shape the questions for the following rounds. The first questionnaire will seek to obtain a broad perspective about sustainability indicators, model and adaptation strategies, sustainable destinations and climate change. You could follow the link below if you kindly agree to participate in this study.

https://surveys.qmu.ac.uk/expertsurveyone

Your involvement is vitally important to reach the aims of the current research and your expertise will benefit a field of knowledge. You will of course receive a summary of the outcomes and at all times data is treated anonymously and in strictest confidence.

If you have any queries or concerns, you are encouraged to discuss them at any time, either with me or my supervisor, Professor Andrew J. Frew (**afrew@qmu.ac.uk**).
Yours Sincerely,
Daria

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Queen Margaret University
EDINBURGH

8.6 Appendix 6- Round 1 Experts Survey

EXPERTS SURVEY - ROUND ONE
Investigating Ski Resorts Business Sustainability

144971	110157651	145207

Definition of Sustainability Indicator and Model

Based upon current research the following definitions of sustainability indicator and model are offered for your comments:

'A sustainability indicator is a variable which can take a certain number of values (statistical) or states (qualitative) according to the circumstances (temporal) that influence or might influence sustainability, therefore, a model of sustainability indicators for any ski resort destination is a tool that can be applied to a long term strategy which measures and weights not only the outer (external) sustainability with all its components (politico- economic , socio-cultural, environmental), but also the inner (internal) sustainability of a ski resort towards its business sustainability and viability'.
Outer (external) sustainability may operate with a certain set of sustainability indicators in the form of a model of sustainability indicators that predominantly evaluates an impact (positive or negative) towards the components of sustainability. Inner (internal) sustainability may operate with a set of sustainability indicators for the internal use generated from the actual or potential adaptation strategies in order to provide a business sustainability and viability for a ski resort.

1. Do you think this definition of sustainability indicator is appropriate or could it be expanded upon or improved?

2. What would you consider the aims of sustainability indicators for ski resorts are?

3. For a ski resort what would you consider to be the main priority in any model of sustainability indicators? Please, frame your response in terms of both inner (internal) and outer (external) sustainability.

4. In choosing any model of sustainability indicators for a ski resort what factors should be taken into consideration?

5. Any additional comments? *(Optional)*

Respondent Profile

6. What is your name?

7. Could you please rank your knowledge and expertise level in the following areas: sustainable tourism, sustainability indicators or adaptation strategies:

Unfamiliar - You consider yourself unfamiliar with the topic area.

Casually acquainted - You have read or heard about the topic in the media or other popular presentations.

Competent - You feel you have enough knowledge about the topic with the formulated opinions due to sufficient reading about the area.

Advanced - You were once an expert but changed the area of your research/work; or are in the process of becoming an expert; or have a connection to the topic and contribute to the knowledge occasionally.

Expert - You consider yourself an expert of the topic: you write articles and participate in the conferences related to the topic; you are evolved in the projects outside your organization dedicated to the topic.

	Sustainable Tourism	**Sustainability Indicators**	**Adaptation Strategies**
a. Unfamiliar	○	○	○
b. Casually acquainted	○	○	○
c. Competent	○	○	○
d. Advanced	○	○	○
e. Expert	○	○	○

8. What is your email address?

EXPERTS SURVEY - ROUND ONE – continuation

A Set of Determinants prior to Selection of Sustainability Indicators' Model in the Forms of Adaptation Strategies for Ski Resorts

To implement a narrow set of sustainability indicators specifically for ski resorts an academic literature suggests formulating at first, the elements or determinants which might be in the forms of adaptation strategies. Only after the elements are analysed and weighted a ski resort can develop and apply a model of relevant sustainability indicators in order to avoid applying the existed broad models with a long list of sustainability indicators.

144971	110157664	145207

9. Adaptation strategies or determinants for a ski resort with regard to the changing environment.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (1 = Very Unimportant, 2 = Unimportant, 3 = Slightly Unimportant, 4 = Nether Unimportant nor Important, 5 = Slightly Important, 6 = Important, 7 = Very Important)

	1	2	3	4	5	6	7
a. Artificial snow-making	○	○	○	○	○	○	○
b. Development of higher terrain	○	○	○	○	○	○	○
c. Ski slope design	○	○	○	○	○	○	○
d. Co-operation with other ski resorts	○	○	○	○	○	○	○
e. Cloud Seeding	○	○	○	○	○	○	○
f. Indoor ski slopes	○	○	○	○	○	○	○
g. Alteration of time to ski during the season	○	○	○	○	○	○	○
h. "Business as usual"	○	○	○	○	○	○	○
i. Cancel ski tourism	○	○	○	○	○	○	○

10. Adaptation strategies or determinants for a ski resort with regard to the changing in government policies about sustainability.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (1 = Very

Unimportant, 2 = Unimportant, 3 = Slightly Unimportant, 4 = Nether Unimportant nor Important, 5 = Slightly Important, 6 = Important, 7 = Very Important)

	1	2	3	4	5	6	7
a. Adaptation new policies	○	○	○	○	○	○	○
b. Modifying and applying new policies	○	○	○	○	○	○	○
c. Requesting a loan from Government to implement new policies	○	○	○	○	○	○	○
d. Co-operation with another ski resort and implementation of new policies in collaboration	○	○	○	○	○	○	○
e. Requesting an adequate tax regime	○	○	○	○	○	○	○
f. "Business as usual"	○	○	○	○	○	○	○
g. Cancel ski tourism	○	○	○	○	○	○	○

11. Adaptation strategies or determinants for a ski resort with regard to the changing economic climate

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (1 = Very Unimportant, 2 = Unimportant, 3 = Slightly Unimportant, 4 = Nether Unimportant nor Important, 5 = Slightly Important, 6 = Important, 7 = Very Important)

	1	2	3	4	5	6	7
a. Co-operation with another ski resort	○	○	○	○	○	○	○
b.Non-snow related activities	○	○	○	○	○	○	○
c. New marketing strategies	○	○	○	○	○	○	○
d. Decreasing prices	○	○	○	○	○	○	○
e. Increasing prices	○	○	○	○	○	○	○
f. Support from related industries	○	○	○	○	○	○	○
g. Investment incentives	○	○	○	○	○	○	○

h. Revenue diversification	○	○	○	○	○	○	○
i. "Business as usual"	○	○	○	○	○	○	○
j. Cancel ski tourism	○	○	○	○	○	○	○

12. Adaptation strategies or determinants for a ski resort with regard to the changing socio-cultural environment

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (1 = Very Unimportant, 2 = Unimportant, 3 = Slightly Unimportant, 4 = Nether Unimportant nor Important, 5 = Slightly Important, 6 = Important, 7 = Very Important)

	1	2	3	4	5	6	7
a. New marketing strategies	○	○	○	○	○	○	○
b. Reinforcing inhabitants' engagement	○	○	○	○	○	○	○
c. Improving multilingual tools	○	○	○	○	○	○	○
d. Co-operation with another ski resort	○	○	○	○	○	○	○
e. Non-snow related activities	○	○	○	○	○	○	○
f. Public education	○	○	○	○	○	○	○
g. "Business as usual"	○	○	○	○	○	○	○
h. Cancel ski tourism	○	○	○	○	○	○	○

13. Adaptation strategies or determinants for a ski resort with regard to the changing technology.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (1 = Very Unimportant, 2 = Unimportant, 3 = Slightly Unimportant, 4 = Nether Unimportant nor Important, 5 = Slightly Important, 6 = Important, 7 = Very Important)

	1	2	3	4	5	6	7

a. Co-operation with another ski resort	○	○	○	○	○	○	○
b. Ski slope design	○	○	○	○	○	○	○
c. Alter skiing location	○	○	○	○	○	○	○
d. Cloud Seeding	○	○	○	○	○	○	○
e. Indoor ski slopes	○	○	○	○	○	○	○
f. Development of higher terrain	○	○	○	○	○	○	○
g. Artificial snow-making	○	○	○	○	○	○	○
h. Investing in easiness of transportation	○	○	○	○	○	○	○
i. Staff training	○	○	○	○	○	○	○
j. Alter skiing location	○	○	○	○	○	○	○
k. "Business as usual"	○	○	○	○	○	○	○
l. Cancel ski tourism	○	○	○	○	○	○	○

Final Page
Thank you very much for your loyalty and dedication.
Daria Zorina, MBA
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8.7 Appendix 7 – Round 2 Experts Survey

EXPERTS SURVEY - ROUND TWO

Investigating Ski Resorts Business Sustainability

The aim of these series of questions is to attempt to refine, categorise and prioritise the list of criteria generated from the previous round of the Delphi study. Any additional criteria that you think as an expert is appropriate should be included at this stage of the process. The anonymity will be strictly maintained throughout the entire time.

178885	112764477	179162

Definition of Sustainability Indicator and Model
The aim of this section is to try to reach a consensus concerning an appropriate definition and aim for a ski resort towards a Sustainability Indicator and Model. All experts' comments from the Round 1 have been accumulated, analyzed and displayed in the following questions for your perusal, agreement or disagreement. Please, note that the criteria listed are produced unaltered from the previous round and they maybe overlap in potential duplication.

1. Please indicate how strongly you agree/disagree with the following statement: a Definition of a Sustainability Indicator (SI) for a Ski Resort should:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
a. Help to illustrate areas where more policy action is needed	○	○	○	○	○
b. Benchmark to compare between regions and resorts	○	○	○	○	○
c. Avoid difficulties by means of quantitative indicators due to the regions diverse	○	○	○	○	○

characteristics and situations					
d. Provide an instrument for monitoring and comparing progress realized in regions and resorts	○	○	○	○	○
e. Merit, identify and calculate sustainability using different formulas	○	○	○	○	○
f. Include economic viability	○	○	○	○	○
g. Be less holistic and more precise towards tourism enterprises	○	○	○	○	○
h. Provide a useful information on a sustainable performance of a ski resort	○	○	○	○	○
i. Be based on a process of sustainability assessment that directs decision-making towards sustainability	○	○	○	○	○
j. Provide useful information enabling sustainability direction and progress to be	○	○	○	○	○

determined					
k. Be a weak proponent of sustainability					
l. Be a strong proponent of sustainability					
m. Consist of narrow explanations to reach simplicity					
n. Need to be broken down into economic, environment and socio-cultural with different criteria for indicators in each.					
o. Need to include more environmental issues regarding ski resorts and hence, stakeholders will be able to foresee the opportunity costs of the development and activities					
p. Acquire meaning in a system as a whole and must be interpreted within some values/data of reference					
q. Be a					

threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development					
r. Help to make a diagnosis and monitoring of the information collected	○	○	○	○	○
s. Be used as instruments and techniques for planning and management the ski destinations.	○	○	○	○	○
t. Identify strengths and weaknesses of a ski resort management	○	○	○	○	○
u. Correct negative impacts	○	○	○	○	○
v. Inspire policies to apply corrective measures and also to evaluate current policies	○	○	○	○	○
w. Become a measurement not only for the sake of it, which has no value, but to pursue changes	○	○	○	○	○
x. Enhance the sustainability of	○	○	○	○	○

a destination as a way to improve the competitive position of the destination.					
y. Include temporal and spatial scale	○	○	○	○	○
z. Be dependent on the type of a ski resort	○	○	○	○	○
aa. Be linked to the dynamics of the main elements of a resort over time	○	○	○	○	○
ab. Illustrate the level of performance, hence the progress achieved	○	○	○	○	○
ac. Clarify what aspects, assets, actors and activities are targeted	○	○	○	○	○
ad. Focus more on the elements which are a higher importance for a specific ski resort	○	○	○	○	○
ae. Be based on all components of sustainability but the components can be treated equally	○	○	○	○	○

af. Reflect the dynamics over time of the ski resort or of the processes that aim to improve its sustainability.	○	○	○	○	○
ag. Not be snapshots in time of certain impacts	○	○	○	○	○
ah. Measure the inner sustainability of a ski resort, its stability and surviving in a long run	○	○	○	○	○
ai. Aim to help ski resorts to function and survive, but other assessments towards their impacts are less important	○	○	○	○	○

2. Would you like to add any comments or add any criteria?

○ Yes ○ No

3. If you have answered "Yes" to Question 2 please explain your reasoning. *(Optional)*

4. Please indicate how strongly you agree/disagree with the following statement: before choosing a model of sustainability indicators for a ski resort the following factors and determinants should be taken into consideration:

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
a. Use of water resources (artificial water sources for	○	○	○	○	○

e.g. snowing machines)					
b. Balanced ratio population - guests	○	○	○	○	○
c. Environmental friendly building and construction practices for tourism facilities	○	○	○	○	○
d. Quality standards ("eco-labels")	○	○	○	○	○
e. Regional traffic management plans	○	○	○	○	○
f. Nights spent by kind of accommodation	○	○	○	○	○
g. Size of population	○	○	○	○	○
h. Number of ski-lifts	○	○	○	○	○
i. Size of the region/resort	○	○	○	○	○
j. Number of same-day visitors	○	○	○	○	○
k. Accommodation capacity	○	○	○	○	○
l. Length of ski runs	○	○	○	○	○
m. Arrivals per transport mode	○	○	○	○	○
n. Land used by tourism facilities	○	○	○	○	○
o. Energy sources used for heating in tourism facilities	○	○	○	○	○

p. Water use					
q. Tourism related waste					
r. Prices for public transport and parking fees					
s. Economic viability as the main priority					
t. Enough business to continue to earn a return on capital					
u. Climate					
v. Marketing					
w. Political constraints					
x. Competition					
y. The impact of a ski resort on socio-ecological systems (including enhancements and different scales of consideration - e.g. local, regional, national)					
z. The impact of a ski resort on intra and intergenerational equity					
aa. Processes for managing a ski resort with respect to public engagement, decision-making, resource efficiency					

ab. All aspects of sustainability but treated differently according to vital needs of a ski resort					
ac. All aspects of sustainability otherwise their individual components may have their viability threatened					
ad. A clear purpose and useful use					
ae. Norms, taxes, sanctions					
af. The perception of the locals and also the demand visiting the ski resorts.					
ag. Maximum adaptation to the specificities and needs of the particular ski resort					
ah. The sources of information available (quantitative and qualitative)					
ai. Reliable and stable data sources					
aj. Collaboration between the local agents in terms of planning instruments					
ak. Regular updates to avoid becoming a static					

diagnosis without continuity					
al. Leadership and compromise of the local authorities to nourish the system					
am. Data being compared to other similar ski resorts					
an. Strengths, skills of a leader who implements the model					
ao. Accessibility of a ski resort					
ap. Response to climate change and resource constraints.					
aq. How the data are used, collected and presented					
ar. Who is involved in the selection					
as. Longevity of the business					
at. The adaptation capacity of the resort,					
au. Market changes as well as to the socio-environmental limitations in the surrounding contexts of the resort					

av. Clarity and simplicity of indicators, their easiness to measure	○	○	○	○	○
aw. Revised sets of indicators	○	○	○	○	○
ax. Indicators being monitored regarding a progress of improvement	○	○	○	○	○
ay. Water and electricity consumption over time	○	○	○	○	○
az. Choosing a narrow set of sustainably indicators specific to needs of a ski resort	○	○	○	○	○
ba. Financial stability	○	○	○	○	○

5. Would you like to add any comments or add any criteria?

○ yes ○ no

6. If you have answered "Yes" to Question 5 please explain your reasoning. *(Optional)*

7. What is your name?

8. Any additional comments? *(Optional)*

Adaptation Strategies or Determinants for a Ski Resort with Regard to the Changing Environment

The aim of this section is to try to reach a consensus about elements or determinants which might be in the forms of adaptation strategies before choosing a model of

relevant sustainability indicators. All experts' preferences have been analysed. The elements, which had not reached 5 (slightly important), were eliminated for the Second Round. The answers, which had scored 7 (very important), were excluded from this round because the consensus among the Delphi Experts was reached. For the Second Round the scale has been reduced to three.

178885	112764489	179162

9. Adaptation strategies or determinants for a ski resort with regard to the changing environment.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (Slightly Important, Important, Very Important)

	Slightly Important	**Important**	**Very Important**
a. Indoor ski slopes	○	○	○
b. Alteration of time to ski during the season	○	○	○

10. Adaptation strategies or determinants for a ski resort with regard to the changing in government policies about sustainability.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (Slightly Important, Important, Very Important)

	Slightly Important	**Important**	**Very Important**
a. Modifying and applying new policies	○	○	○
b. Requesting an adequate tax regime	○	○	○

11. Adaptation strategies or determinants for a ski resort with regard to the changing economic climate.

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (Slightly Important, Important, Very Important)

	Slightly Important	**Important**	**Very Important**
a. New marketing strategies	○	○	○

b. Revenue diversification			

12. Adaptation strategies or determinants for a ski resort with regard to the changing socio-cultural environment

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (Slightly Important, Important, Very Important)

	Slightly Important	**Important**	**Very Important**
a. New marketing strategies			
b. Public education			

13. Adaptation strategies or determinants for a ski resort with regard to the changing technology

Could you please weight the following determinants (adaptation strategies) in terms of an importance of their implementation for ski resorts' business viability (Slightly Important, Important, Very Important)

	Slightly Important	**Important**	**Very Important**
a. Co-operation with another ski resort			
b. Indoor ski slopes			

Final Page
Thank you very much for your loyalty and dedication.
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8.8 Appendix 8 – Round One (Definition)

1. Do you think this definition of sustainability indicator is appropriate or could it be expanded upon or improved?
Appropriate, but there are some aspects that you may include: An indicator acquires meaning in a system as a whole and must be interpreted within some values/data of reference. It must be a threshold of reference in order to guarantee that every indicator satisfies the principles of a sustainable development. The indicator in a system helps to make a diagnosis and monitoring of the information collected. Also long term strategies refer to planning and management so the use of indicators must be seen as instruments and techniques for planning and management the ski destinations.
A very good definition
I agree with the definition and also need to emphasize on the inner sustainability that is crucial to any organization and measures its stability and surviving in a long run, however, what is a time frame for planning? In the academic literature there are plenty of articles about sustainability and its 'legs" but is is only one way street because the organizations' perspective is most of the time ignored.
I am not convinced that this is actually a definition of sustainability indicators as it is circumspect when it comes to defining the sense in which you are referring to sustainability - is it a weak proponent of sustainability or a strong proponent? The difference between the two would bring implications for the indicators and their definitions. That aside I think that it is a little cumbersome as a definition (sorry I do not mean to be unkind) but its complexity makes it almost seem as if it is talking around in circles - there is a lot to be said for simplicity. I would have expected the indicators to have been broken down into economic, environment and socio-cultural and you would have different criteria for indicators in each.
I find this definition to be very complicated. I personally prefer simplicity over complexity. I define 'sustainability assessment' as "a process that directs decision-making towards sustainability" From this definition I would define a sustainability indicator as "something that provides useful information enabling sustainability direction and progress to be determined". Having such an open and general definition enables multiple aspects of sustainability to be determined - these might be procedural aspects as well as substantive outcome aspects.
I suggest to be more specific Costs of snowmaking Costs of water consumption Increased water consumption at the expense of local water supply? water consumption in percent of total local water supply technical snow and delayed plant growth in the melting period
In order to establish whether a definition is appropriate, it is essential to define the entity which is being evaluated. According to the text above, these indicators refer to a ski resort. Therefore I would start a definition by clarifying what aspects, assets, actors and activities are targeted by these indicators. Secondly,

there seems to be an assumption that all elements included in a ski resort, are equally important for sustainability (hardly the case). The homogeneity of the resort is not plausible. Thirdly, the indicators seem to be static: they are snapshots in time of certain impacts but do not reflect the dynamics over time of the ski resort or of the processes that aim to improve it's sustainability. The definition implies that sustainability (in the sense of sustainable development) is only external while the internal sustainability (as business longevity) only reflects the business aspects. Is there no sustainability aspect relevant for internal processes? There needs to be a clear description of what is "a model" (is it a sum of all indicators or it includes the interdependencies between indicators), and what constitutes an indicator. One or two examples would be very useful. Overall, I find the definition(s) to be unnecessarily complicated and hard to understand. Why the need to create new sets of indicators? What is wrong with the ones already available?
Integration of the indicators within a management system is important. measuring for the sake of measuring has no value, it is only important if this information is used to make changes.
Overall, I would agree to the definition! It is rather unclear for me, what is meant by inner sustainability? This is related to businesses, to the microeconomic level in general, related to the well-being of local people? However, inner and outer sustainability will influence each other which might arise the question how to differentiate between inner and outer sustainability indicators?!
The model could also be applied to a short term. Anther remark from my side, sustainable indicator is a merit, there are lots of them in the literature with different formulas to calculate
The word sustainability is inherently challenging. It means different things to different people. Scale is a major issue - for example temporal and spatial (i.e. how the scale is defined can greatly impact the definition of what is sustainable or not). The idea of resilience seems to be in competition with the term sustainability in contemporary thinking about environmental issues.
Yes, but rather wordy and complicated. In reality I don't think you can separate external and internal aspects as sustainability is supposed to be a holistic concept and thus internal and external would or should be dependent on each other and influenced by each other.

2. What would you consider the aims of sustainability indicators for ski resorts are?
To measure the ski resorts’ performance
Help to make a diagnosis. Identify strengths and weaknesses of the ski resort management. Correct negative impacts Provide information for a better planning and management of the ski resort under a sustainability framework A system of indicators is a tool that can be used both to inspire policies to apply corrective measures and also to evaluate current policies.

I don't think that it being in the context of a ski resort makes it different from sustainability indicators in general - except that there may be some activity specific ones in terms of the environment. In terms of the livelihood of the stakeholders these should be considered wide enough so that they take into account every type of livelihood including those only affected indirectly by the activity - such as the opportunity costs of the development and activities.
In my opinion, sustainability indicators should be process indicators, linked to the dynamics of the main elements of a resort over time, towards a more sustainably performant resort. The level of performance illustrated by the value of indicators would reflect the progress achieved.
It is highly dependent on the type of ski resort you are talking about (conglomerate or family run).
See above. Indicators should be used to drive competitiveness. What it is that enhances that competitiveness will vary across destinations and across time, but the overall aim should be to enhance the sustainability of a destination as a way to improve the competitive position of the destination.
Specifically for the ski resorts the aim is to measure its performance for the purpose of surviving in future, an impact on environment and so on, from my point of view, has to be after that.
The aim of a sustainability indicator for a ski resort would be: to provide useful information on the sustainability performance of a ski resort.
The aims are to merit, identify and calculate
There is an inherent problem in talking of sustainability for a specific place or type of place because as above the concept is holistic, not just for tourism or one form of tourism or one form of tourism enterprise. In most cases with respect to enterprises/operations the key issue is economic viability. If a resort is not economically viable the rest does not matter as it will not operate.
useful for monitoring such indicators are useful for public policy makers and managers of ski lift companies
• illustrating areas where more policy action in regard to maintaining or improving sustainability is needed • benchmarking which allows a comparison between regions and resorts (although interregional comparison by means of quantitative indicators is difficult, due to the regions´diverse characteristics and situations) • providing an instrument for monitoring and comparing progress realised in region/resorts

3. For a ski resort what would you consider to be the main priority in any model of sustainability indicators? Please, frame your response in terms of both inner (internal) and outer (external) sustainability.
?
For the inner – economic, political, finial components towards a particular ski

resort, for outer - the same criteria but with a focus on ski resorts' contribution to the economy, for instance, of a particular country.
Economic viability, enough business to continue to earn a return on capital. Obviously if it breaks rules such as environmental pollution it may be closed down, but the main priority in this case is economic.
For inner sustainability = longevity of the business, the main priority should be to measure the innovativeness and quality of the service provided. For the outer sustainability (= sustainable development) the main priority should be the adaptation capacity of the resort, to market changes as well as to the socio-environmental limitations in the surrounding contexts of the resort.
For the ski resort it is a matter of financial stability (therefore, accounting figures could be indicators), all elements of sustainably should be taken into account
I would take my lead from Robert Gibson's eight principles (or criteria as he calls them) for sustainability assessment. That is: - the impact of a ski resort on socio-ecological systems (including enhancements and different scales of consideration - e.g. local, regional, national) - the impact of a ski resort on intra and intergenerational equity - processes for managing a ski resort with respect to public engagement, decision-making, resource efficiency etc
In terms of the outer sustainability - a clear set of indicators should be developed (the less - the better) to avoid complication and I doubt whether all components should be treated equally. It depends which one is jeopardized or needs to be improved. In terms of the inner sustainability - the same applies here, nevertheless, it is more a subjective process related to a component which is more essential to a ski resort
Internal/External: • Use of water resources (artificial water sources for e.g. snowing machines)• Balanced ratio population – guests• Environmental friendly building and construction practices for tourism facilities• Considering quality standards („eco-labels")• Regional traffic management plans
Ski resorts will face numerous challenges, which experts in ski destinations are better placed to identify. In an external environment, the challenge of climate change, water usage and accessibility would seem to be key. Internal challenges will be also responding to climate change and resource constraints.
Surely sustainability means that it either all has to be a priority otherwise aspects will suffer and their individual components may have their viability threatened?
this is difficult to understand
To have a useful use, utility, a clear purpose. Norms, taxes, sanctions have to be inspired and responding to these indicators. To count with the perception of the locals and also the demand visiting the ski resorts. Maximum adaptation to the specificities and needs of the particular ski resort where is going to be applied in relation to others.

4. In choosing any model of sustainability indicators for a ski resort what factors should be taken into consideration?
?
All the components of sustainability (both outer and inner) plus additional factors which might be of importance to a ski resort
Business, climate, marketing, political constraints, competition
Look are the previous answer
I think I have answered this in Question 3
I understand sustainability as a continuous process. Therefore, in selecting a set of indicators (not sure if a set = a model), the following aspects are important: 1. the clarity and simplicity of indicators 2. The easiness to measure them 3. the focus of the indicators on describing the progress of improvements being monitored (as opposed to a status report) 4. any list/set/ models should be able to be regularly revised and adjusted to fit the evolving goals of the resort over time
see above water consumption over time electricity consumption over time solution Water dams can produce electricity and can be used for snowmaking
THE GTSC offers more than 150 indicators that need to be taken into account
The sources of information available (quantitative and qualitative). It is important to work with reliable and stable data sources. Contrast the indicators with the local agents perception assuring the debate and compromise with them in order to transform this information in planning instruments. Categorise the indicators into different blocks of indicators (pressure, state-quality, response policies).
What is the purpose of the system how are the indicators selected who is involved in their selection how are the data used what changes as a result of collecting the data how are the data presented
Where are the weak sides, those factors are crucial!
• Nights spent by kind of accommodation• Size of population• Number of ski-lifts• Size of the region/resort • Number of same-day visitors• Accommodation capacity• Length of ski runs• Arrivals per transport mode• Land used by tourism facilities• Energy sources used for heating in tourism facilities• Water use• Tourism related waste• Prices for public transport and parking fees

5. Any additional comments?
As I mentioned before, the list of indicators should be short but precise
Bear in mind that there is a risk with the systems of indicators to become a static diagnosis without continuity if they are not regularly updated (it might happen that there is no chronological continuity of statistics). A leader must be impulsing the model (helping to obtain, exploit and interpret the data). Leadership and compromise of the local authorities to nourish the system. Data must also be compared to other similar ski resorts. Not every indicator has the same value and

a weight must be assigned according to the objectives and a complex index should be created.
I find it hard to give opinions about indicators (which are typically precise) without a clear understanding of the aim of the indicators in question. PS: The font of the text in boxes could be larger :) PPS: the table below does not function properly: in order to move to the next page, it requires all the 5 levels of expertise to be marked - meaning that one has to admit to be unfamiliar and expert at the same time in some fields
I think there is a need to separate sustainability from viability, and also to find some way of smoothing out annual variations in climatic influences, lack of snow, high winds etc. Scottish ski resorts, based on my experience over almost fifty years, are subject to high levels of variability of weather conditions, not only at the resort, but also in their main market areas, which radically affects the level of demand and participation.
look at whistler 2020 for what I believe is one of the best systems of destination indicators. it is cross-sectorial rather than focusing on a specific industry and its aim is to enhance the destination of a place, rather than an industry. This is easier because whistler is such a special place that the industry recognises its need to work with the destination, but it does illustrate how competitiveness and sustainability for residents and industry go hand in hand. I also like the transparency of the reporting and the usability of the indicators once the data have been collected.
no other comments
Question 7 does not work properly. Sustainable tourism: expert Sustainability Indicators: Competent Adaptation Strategies: expert
The Question 7 buttons do not appear to work correctly.

8.9 Appendix 9 - Consent Form

Queen Margaret University

EDINBURGH

Consent Form

"An Investigation of Resort Business Sustainability: a Comparative Study of Scottish and Swiss Ski Resorts.

I have read and understood the information sheet and this consent form. I have had an opportunity to ask questions about my participation. I understand that I am under no obligation to take part in this study. I understand that I have the right to withdraw from this study at any stage without giving any reason. I agree to participate in this study.

Name of participant: _____

Signature of participant: _____

Signature of researcher: _____

Date: _____

Name of researcher: Daria Zorina
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8.10 Appendix 10 - Information Sheet

Queen Margaret University

EDINBURGH

Information Sheet for Potential Participants

My name is Daria Zorina and I am a PhD candidate from the School of Arts, Social Science and Management at Queen Margaret University in Edinburgh. I am undertaking a research project for my PhD thesis. The title of my project is: "An Investigation of Resort Business Sustainability: a Comparative Study of Scottish and Swiss Ski Resorts.

This study is looking into the factors as potential barriers for the ski resorts in Scotland and Switzerland to maintain a sustainable business practice. It will also target to modify a model of relevant indicators for generic ski resort use.

I would like to interview ski resort managers, tour operators, travel agencies, representatives of local business, Governmental organizations, Non- profit organizations, staff of the chosen ski resort. There are no criteria (e.g. gender, age, or health) for being included or excluded – everyone is welcome to take part.

If you agree to participate in the study, you will be asked to participate in the interviews. The researcher is not aware of any risks associated with the project. The whole procedure should take no longer than 45 minutes. You will be free to withdraw from the study at any stage and you would not have to give a reason.

All data will be anonymised as much as possible, but you may be identifiable from tape recordings of your voice. Your name will be replaced with a participant number, and it will not be possible for you to be identified in any reporting of the data gathered. The results may be published in a journal or presented at a conference.

If you would like to contact an independent person, who knows about this project but is not involved in it, you are welcome to contact Dr. Peter K Falconer. His contact details are given below. If you have read and understood this information sheet, any questions you had have been answered, and you would like to be a participant in the study, please now see the consent form.

Contact details of the researcher:

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Contact details of the independent adviser

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